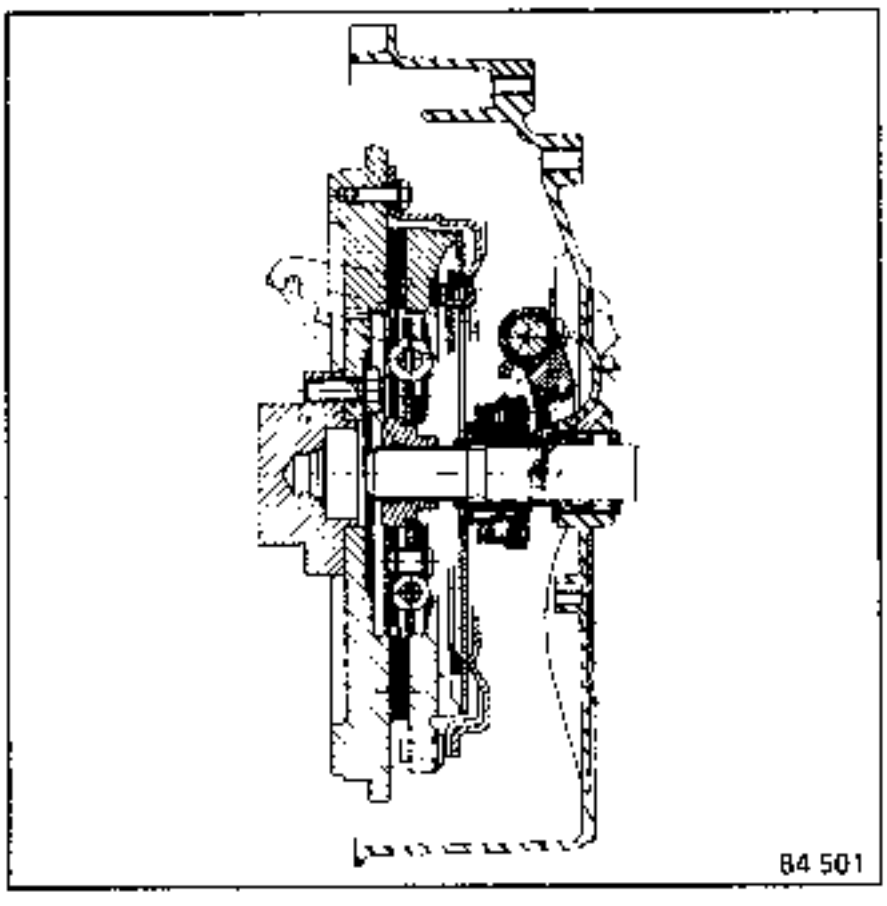
- Single disc clutch operating dry.
- Diaphragm spring pressure plate.
- Friction disc with elastic hub.
- Self-centring ball type withdrawal pad in constant contact.

CABLE OPERATED CONTROL

J636-J637-S637-J635-S635



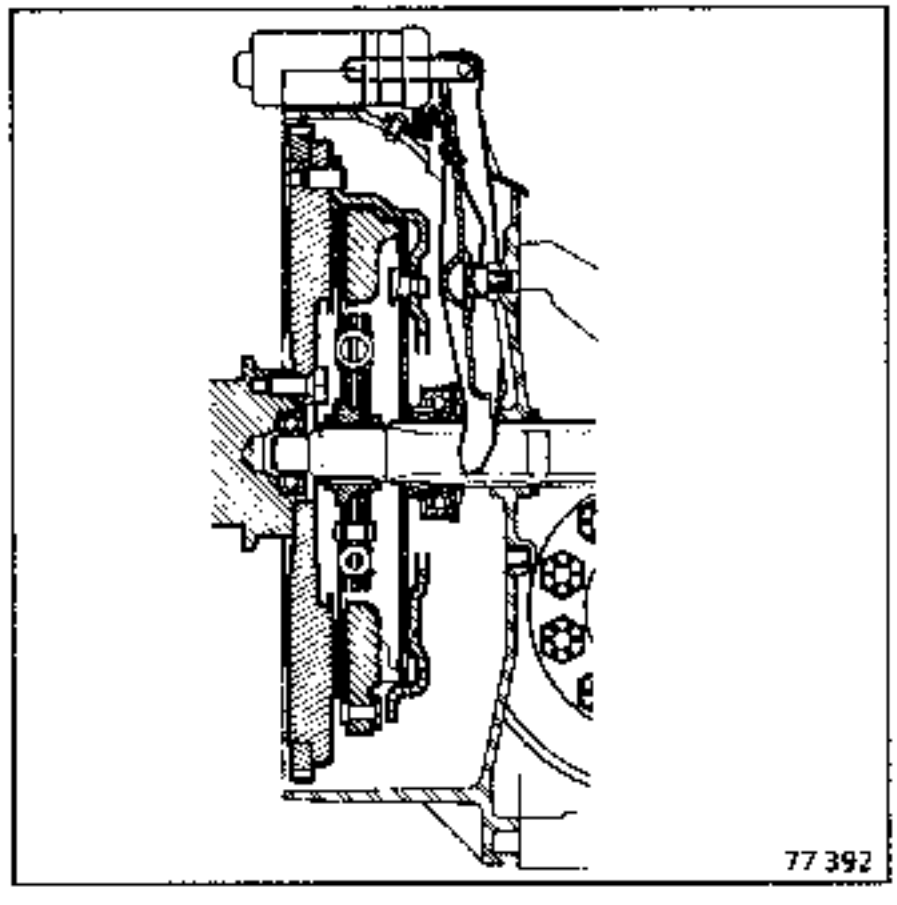
HYDRAULIC CONTROL

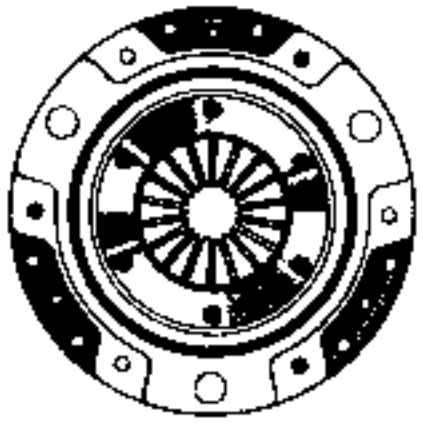
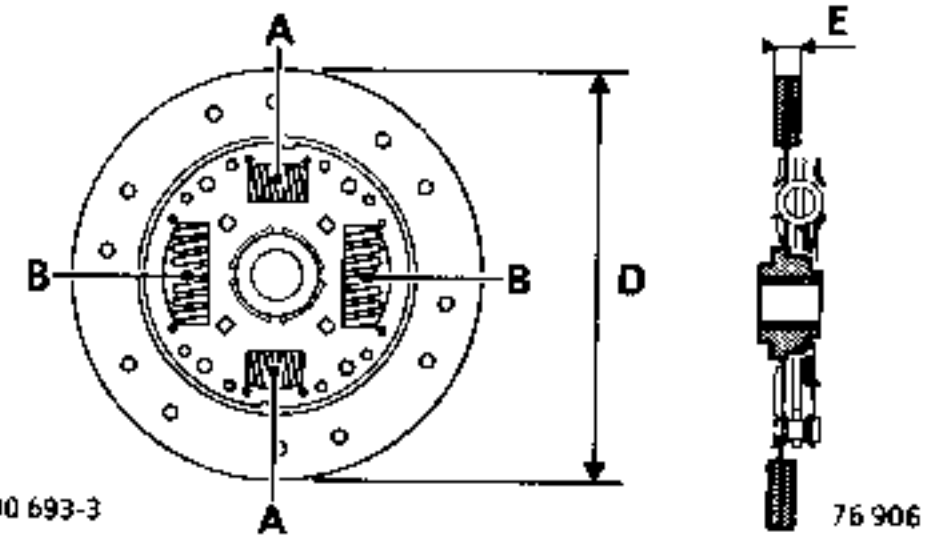
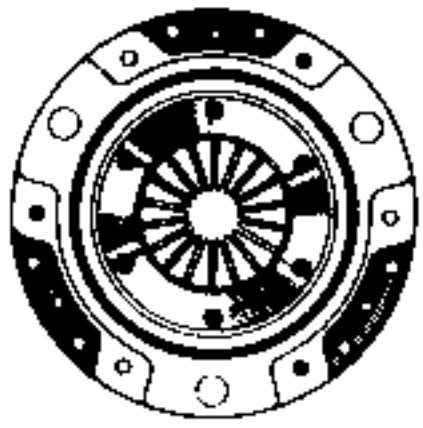
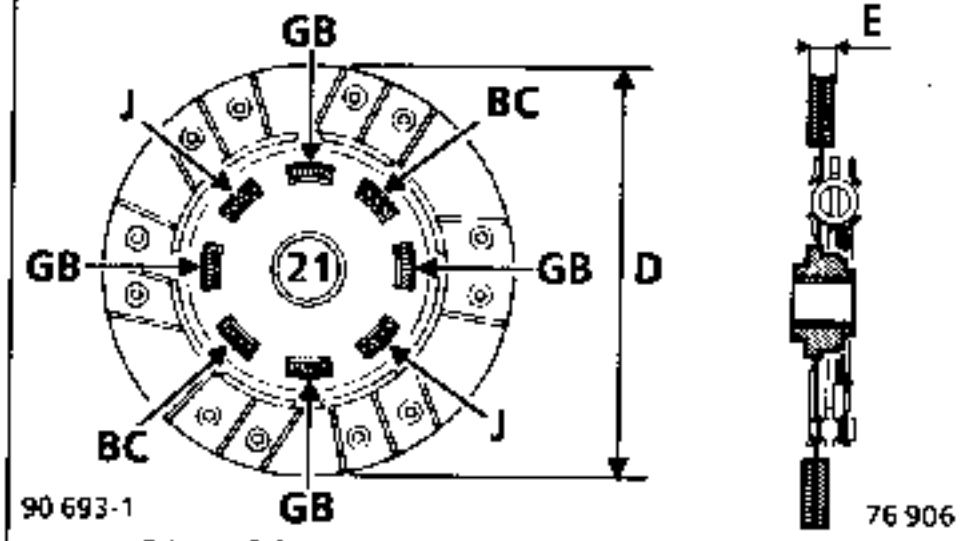
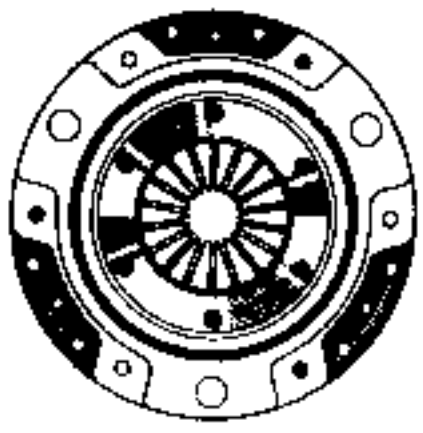
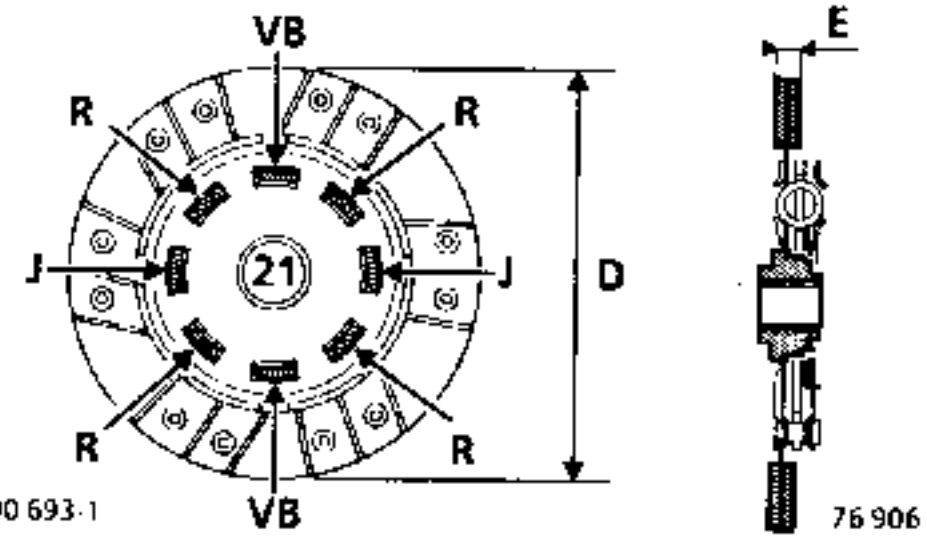
J638

The hydraulic system is supplied with the fluid contained in the brake fluid reservoir.

The principle of this control system is the same as that of a brake system.

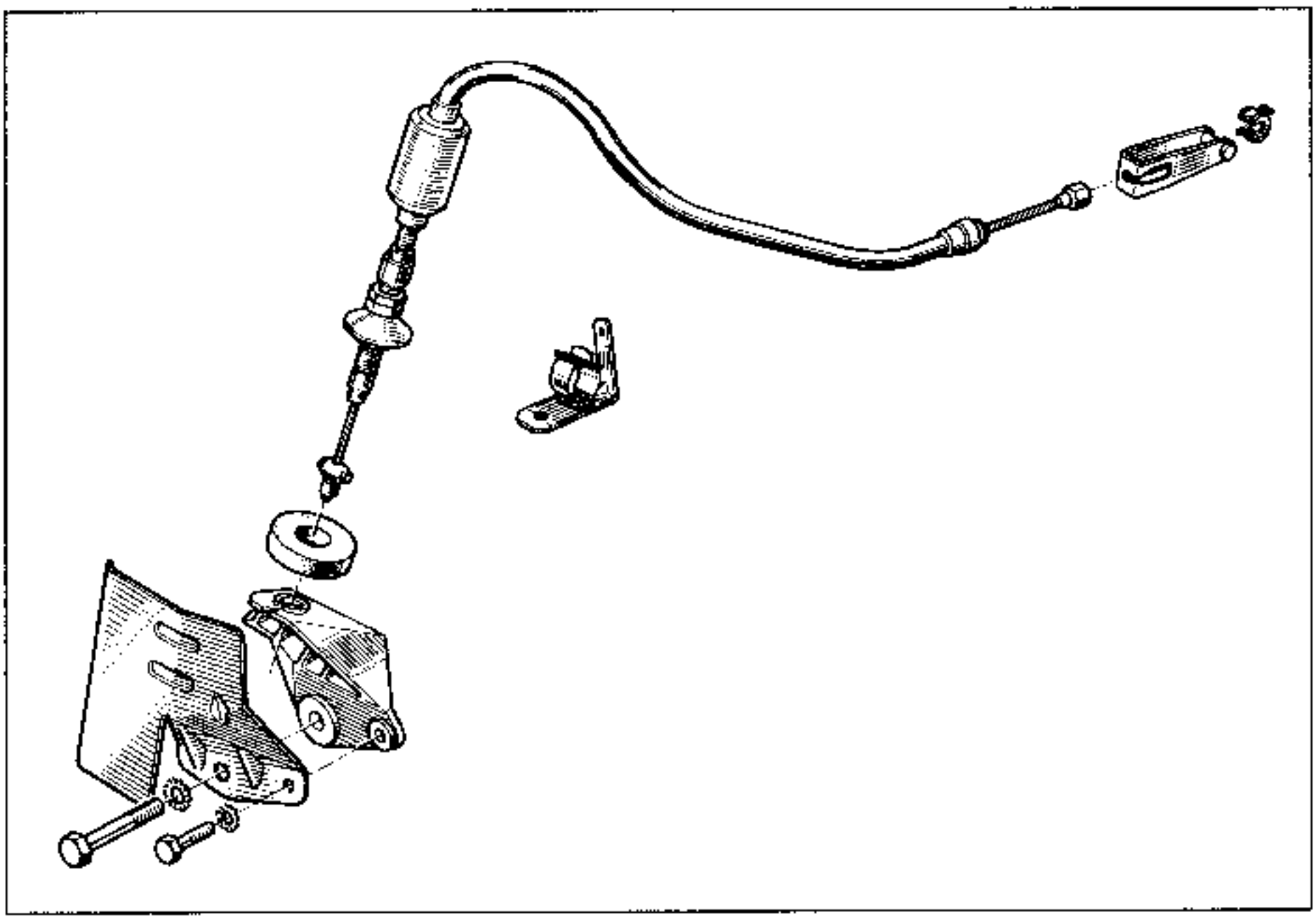
The clutch pedal acts on the master cylinder which causes the slave cylinder piston to move and act on the fork.

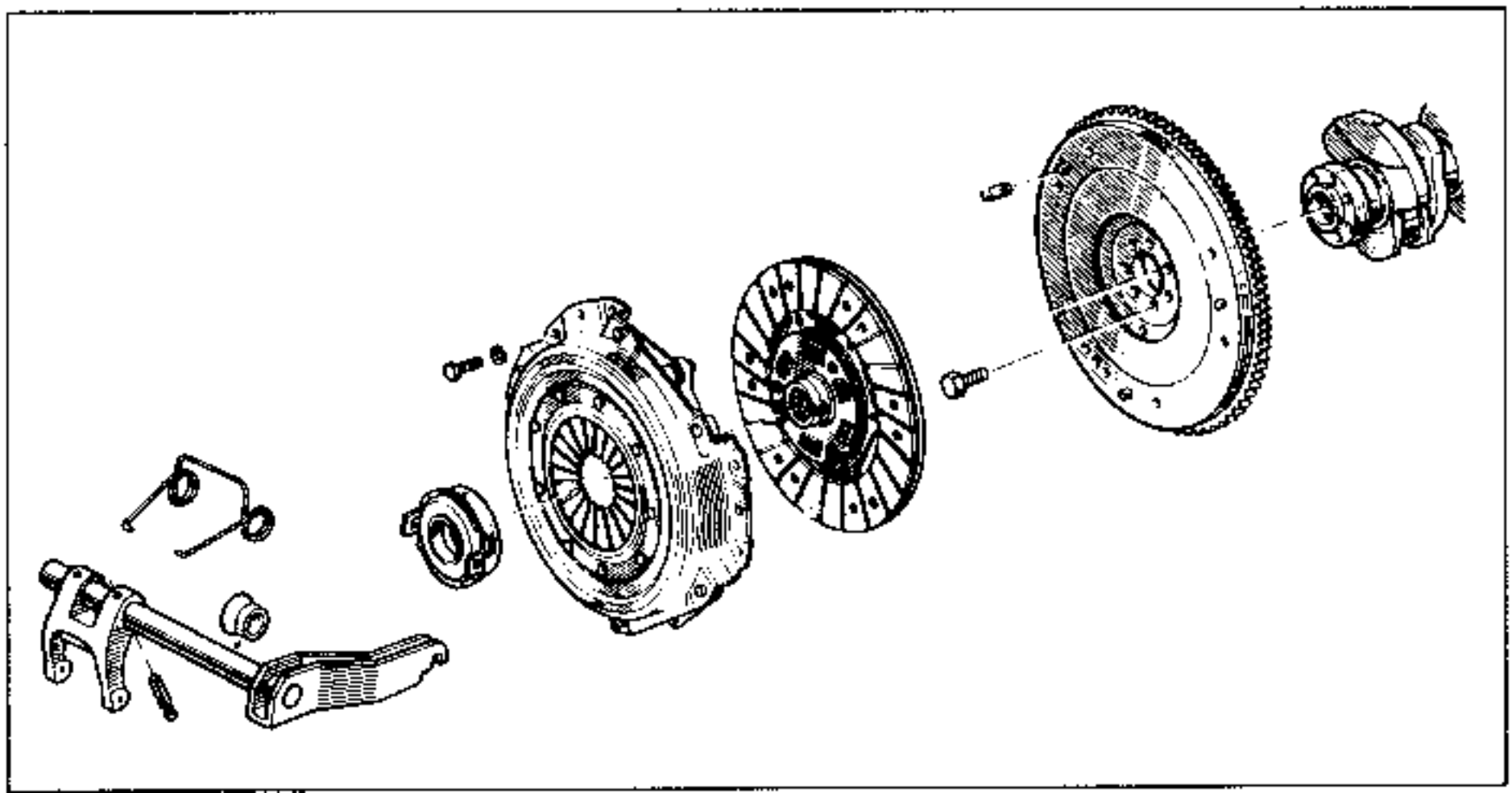


VEHICLE TYPE	MECHANISM	DISC
J636 **J637** **S637**	 76 907 **215 CP 4500**	 90 693-3 76 906 21 splines E = 6,8 mm A = Beige-Orange D = 215 mm B = Lilac Green
J635 **S635**	 76 907 **215 CP 4500**	 90 693-1 76 906 21 splines J = Yellow GB = Grey Blue E = 6,8 mm BC = Light Blue D = 215 mm
J638	 76 907 **235 CP 5500**	 90 693-1 76 906 21 splines E = 6,5 mm VB = Green White D = 228,6 mm J = Yellow R = Red

CABLE OPERATED CLUTCH

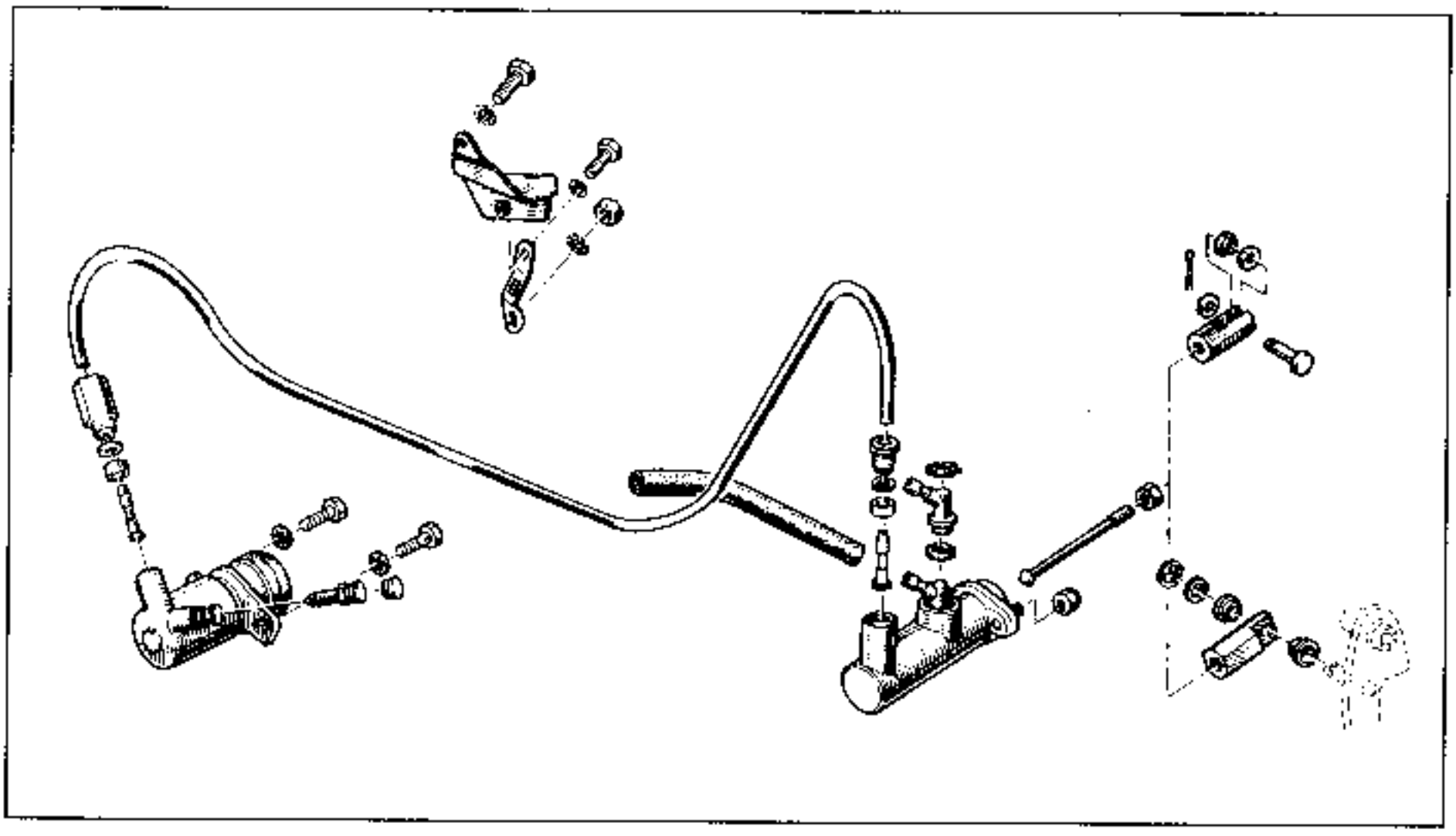
J636 - J637 - S637 - J635 - S635

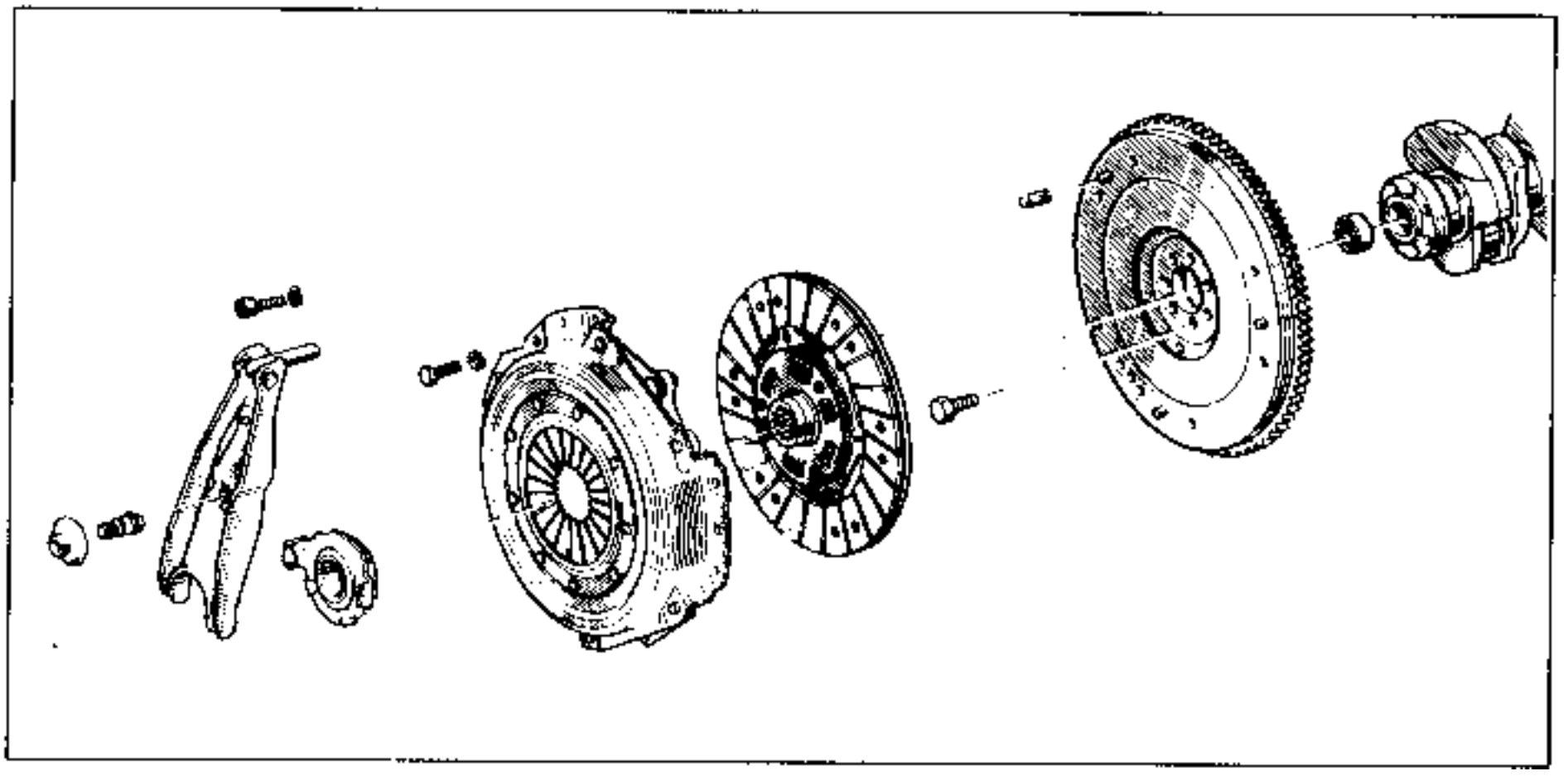




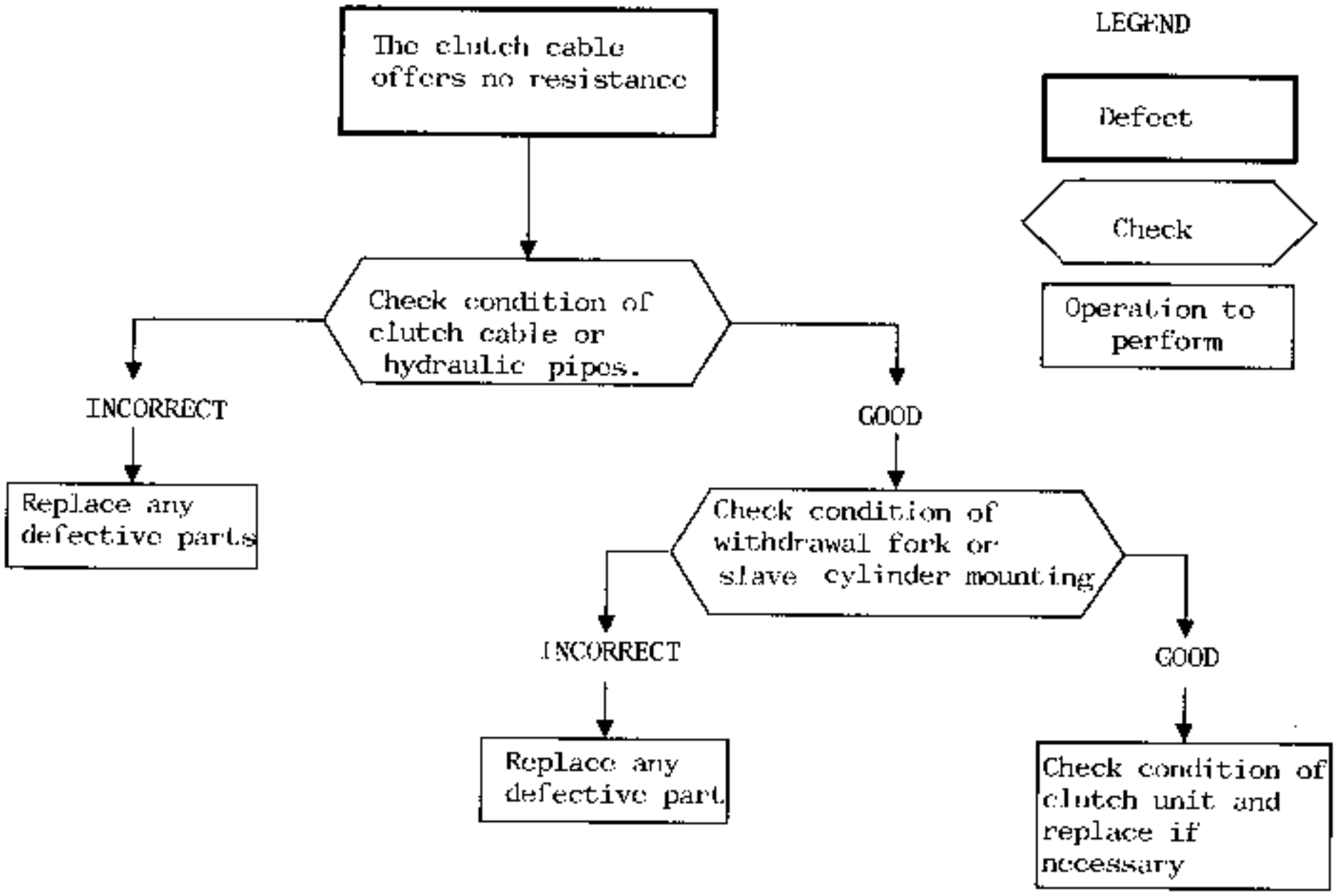
HYDRAULICALLY OPERATED CLUTCH

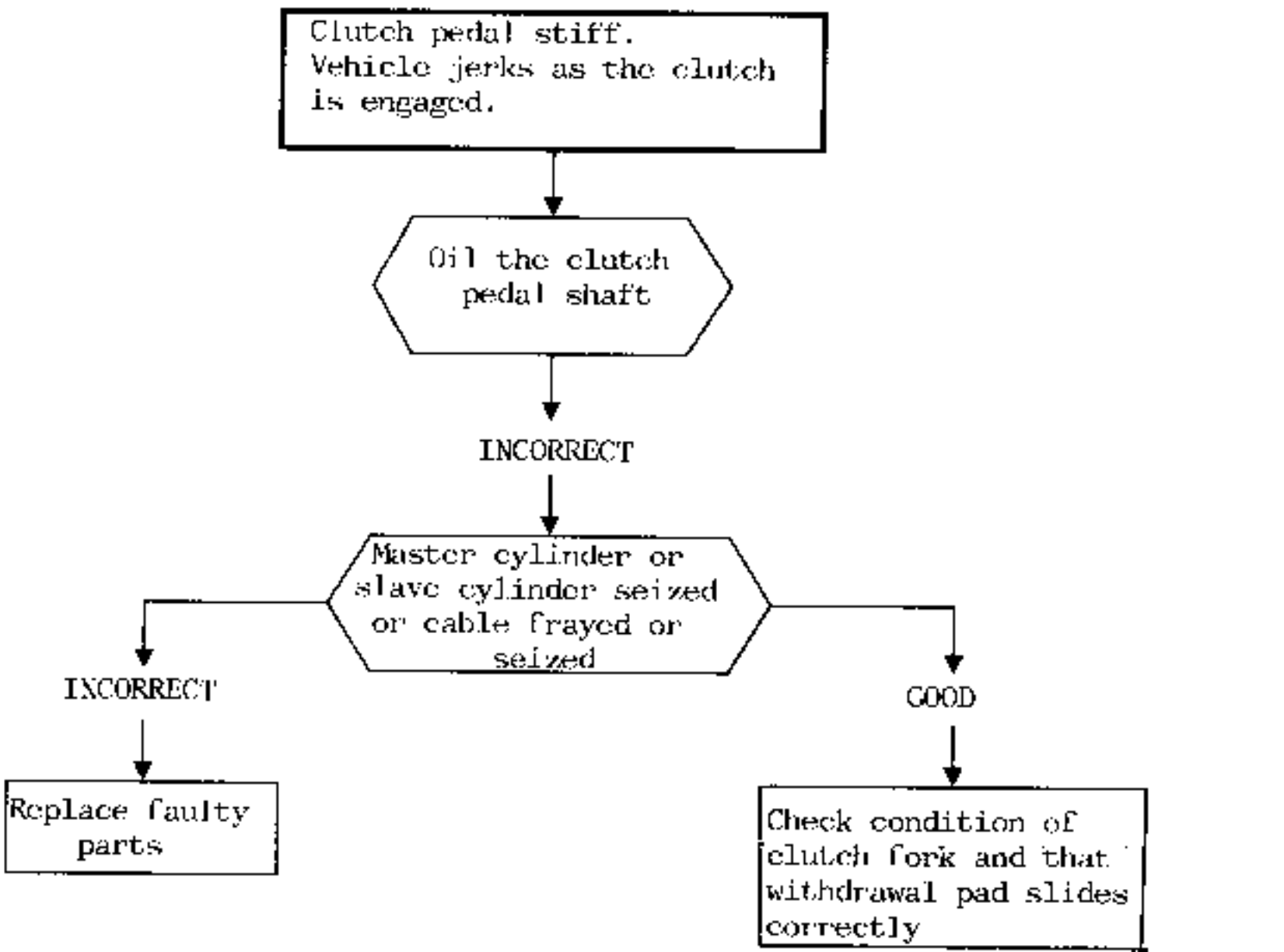
J638

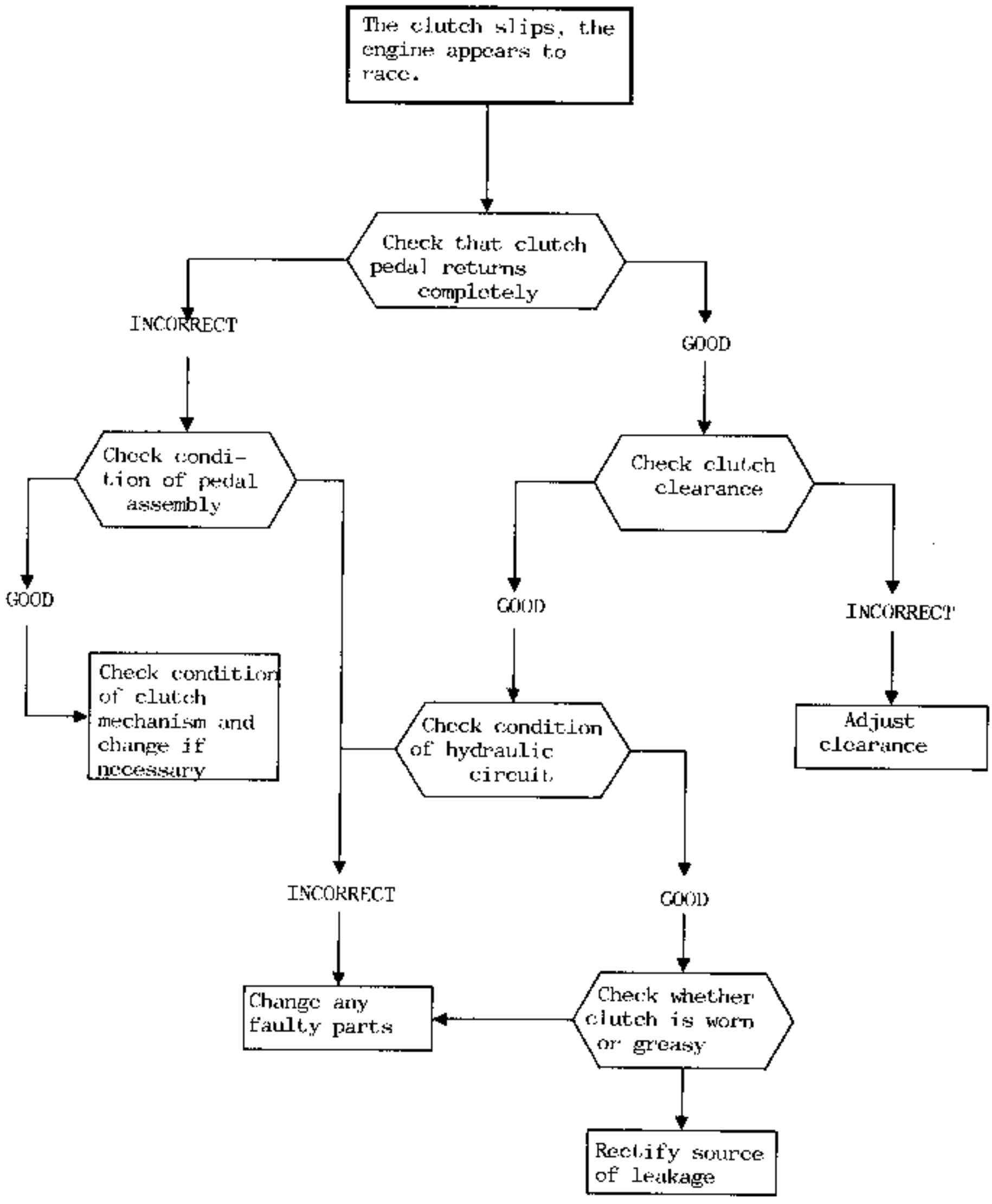


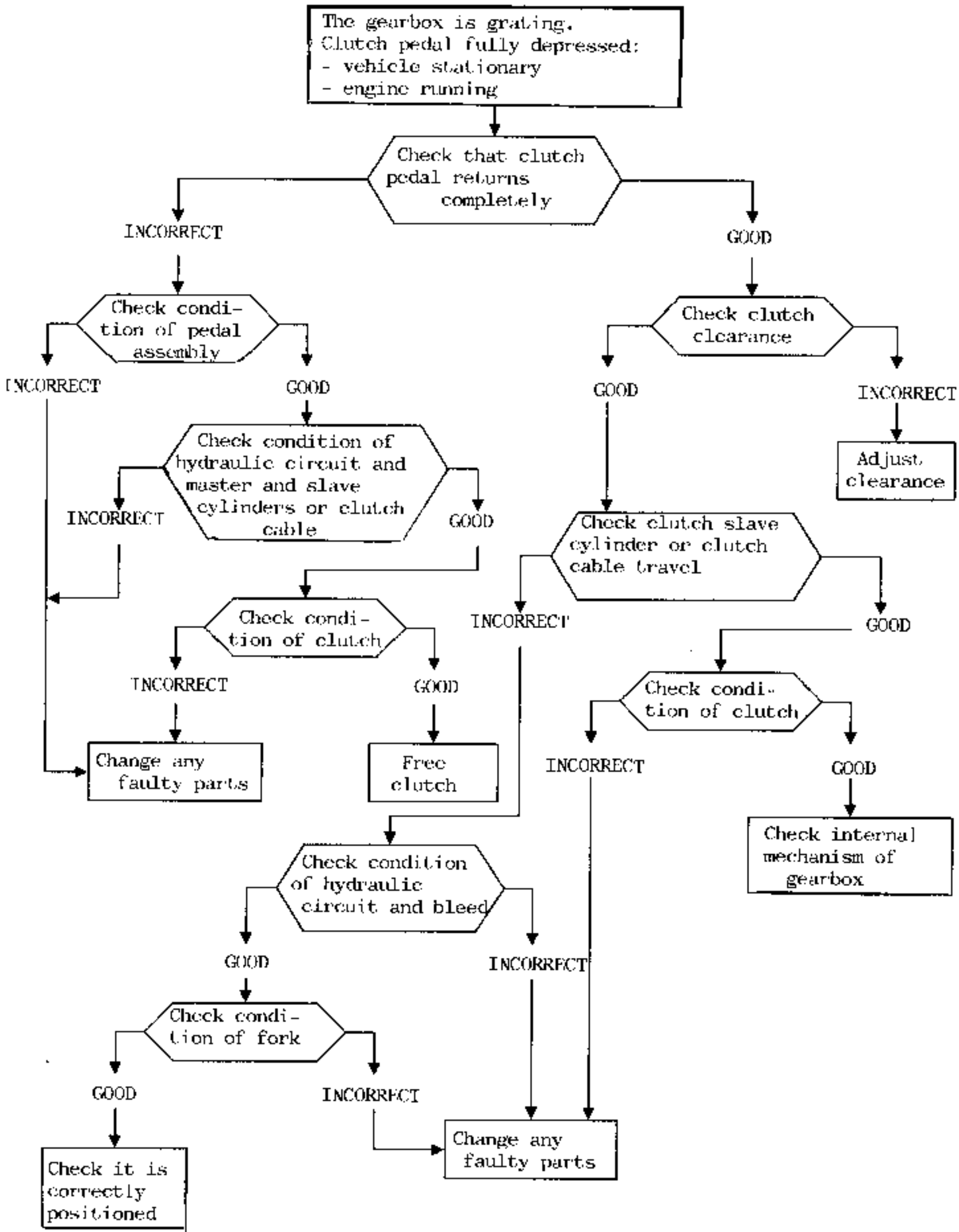


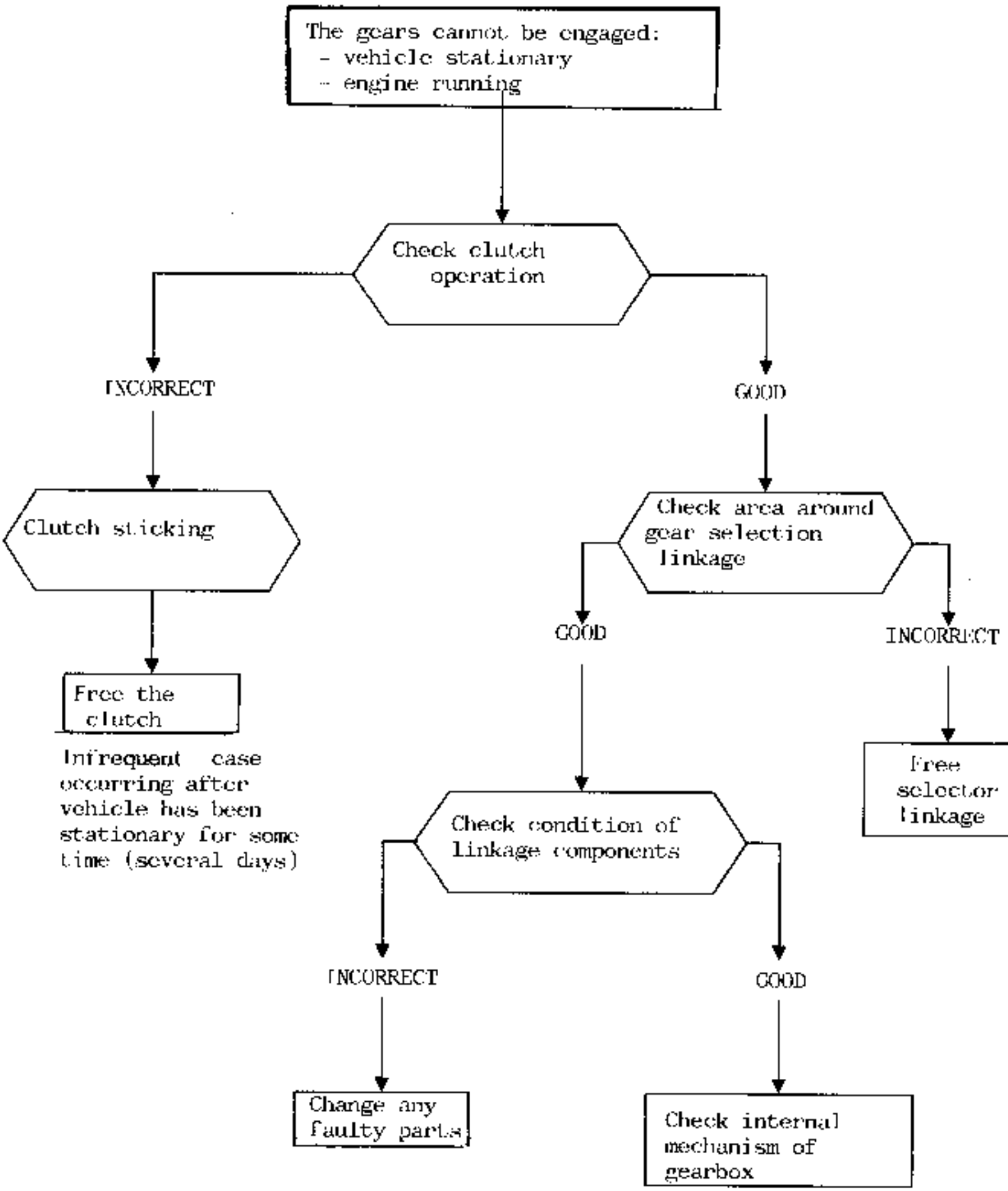
TYPE	PACKAGING	PART NO	UNIT
MOLYKOTE M55	1 litre tin	77 01 421 079	Clutch shaft splines
MOLYKOTE BR2	1 kg tin	77 01 421 145	Splines on righthand sunwheel Clutch fork pivot Clutch withdrawal pad guide Clutch fork pads
CAF 4/60 THIXO	100 g tube	77 01 404 452	Ends of roll pins on drive shafts
LOCTITE 518	24 ml syringe	77 01 421 162	Casing joint faces


The clutch cable offers no resistance
Check condition of clutch cable or hydraulic pipes.
INCORRECT
Replace any defective parts
GOOD
Check condition of withdrawal fork or slave cylinder mounting
INCORRECT
Replace any defective part
GOOD
Check condition of clutch unit and replace if necessary
LEGEND
Defect
Check
Operation to perform

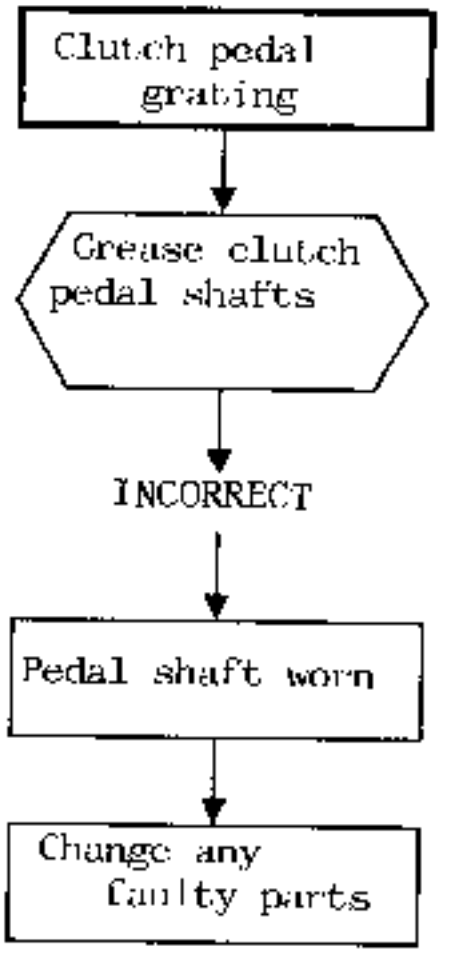

Clutch pedal stiff.
Vehicle jerks as the clutch is engaged.
Oil the clutch pedal shaft
INCORRECT
Master cylinder or slave cylinder seized or cable frayed or seized
INCORRECT
Replace faulty parts
GOOD
Check condition of clutch fork and that withdrawal pad slides correctly

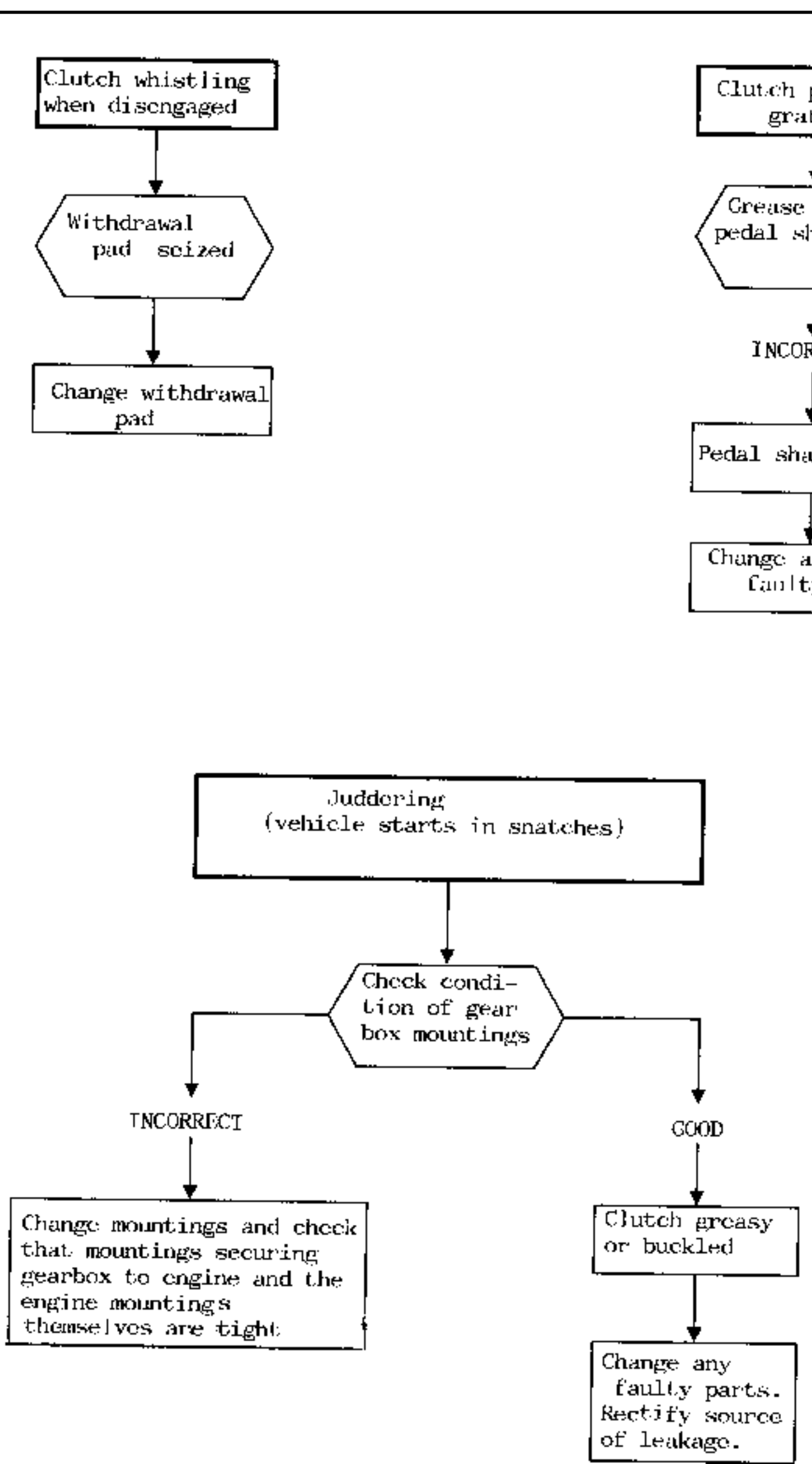

The clutch slips, the engine appears to race.
Check that clutch pedal returns completely
INCORRECT
GOOD
Check condition of pedal assembly
Check clutch clearance
GOOD
GOOD
INCORRECT
Check condition of clutch mechanism and change if necessary
Check condition of hydraulic circuit
Adjust clearance
INCORRECT
GOOD
Change any faulty parts
Check whether clutch is worn or greasy
Rectify source of leakage


The gearbox is grating.
Clutch pedal fully depressed:
- vehicle stationary
- engine running
Check that clutch pedal returns completely
INCORRECT
GOOD
Check condition of pedal assembly
Check clutch clearance
INCORRECT
GOOD
GOOD
INCORRECT
Adjust clearance
Check condition of hydraulic circuit and master and slave cylinders or clutch cable
INCORRECT
GOOD
Check clutch slave cylinder or clutch cable travel
Check condition of clutch
INCORRECT
GOOD
INCORRECT
GOOD
Change any faulty parts
Free clutch
Check condition of clutch
INCORRECT
GOOD
Check internal mechanism of gearbox
Check condition of hydraulic circuit and bleed
GOOD
INCORRECT
Check condition of fork
GOOD
INCORRECT
Check it is correctly positioned
Change any faulty parts


The gears cannot be engaged:
- vehicle stationary
- engine running
Check clutch operation
INCORRECT
GOOD
Clutch sticking
Free the clutch
Infrequent case occurring after vehicle has been stationary for some time (several days)
Check area around gear selection linkage
GOOD
INCORRECT
Free selector linkage
Check condition of linkage components
INCORRECT
GOOD
Change any faulty parts
Check internal mechanism of gearbox

Clutch whistling when disengaged
Withdrawal pad seized
Change withdrawal pad


Clutch pedal grating
Grease clutch pedal shafts
INCORRECT
Pedal shaft worn
Change any faulty parts


Juddering (vehicle starts in snatches)
Check condition of gear box mountings
INCORRECT
GOOD
Change mountings and check that mountings securing gearbox to engine and the engine mountings themselves are tight
Clutch greasy or buckled
Change any faulty parts. Rectify source of leakage.

REPLACING

This operation requires the gearbox to be removed first.

ESSENTIAL SPECIAL TOOLING	
Mot.582	Locking Clamp
Emb.786-01	Clutch Centring Tool
Plus gearbox removal tooling	

TIGHTENING TORQUE (in daNm)	
Clutch unit bolts	2.5

REMOVAL

Fit clamp Mot.582.

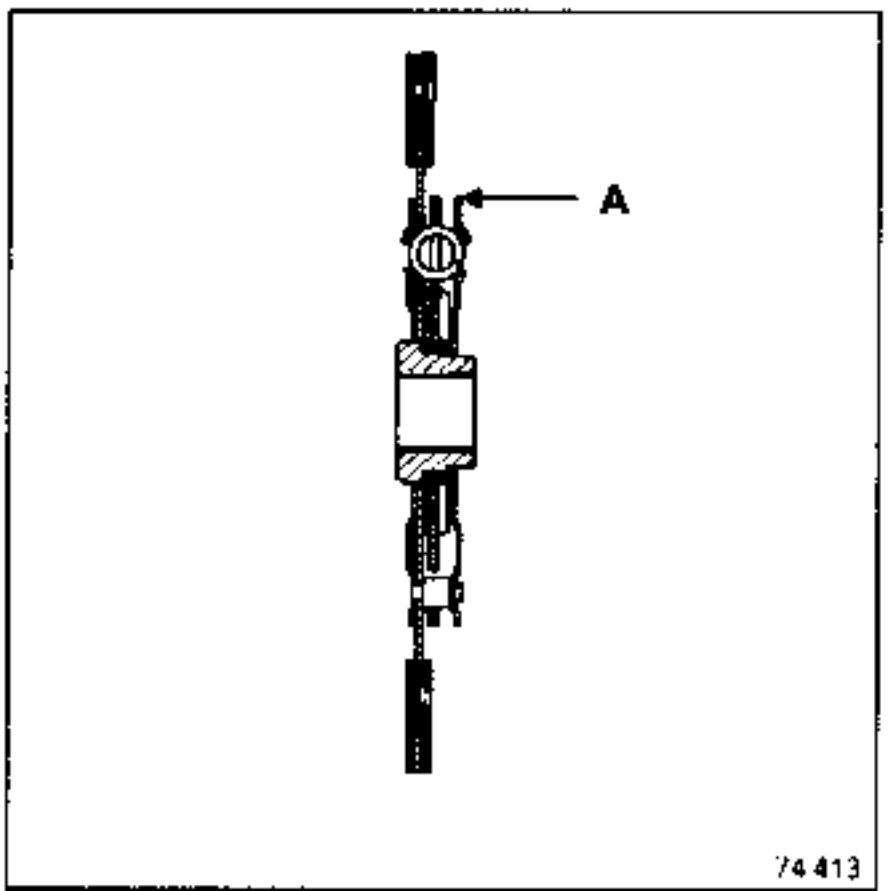
Remove the clutch securing bolts and take off the clutch and disc.

Check and replace any defective parts.

REFITTING

Degrease the flywheel friction face.

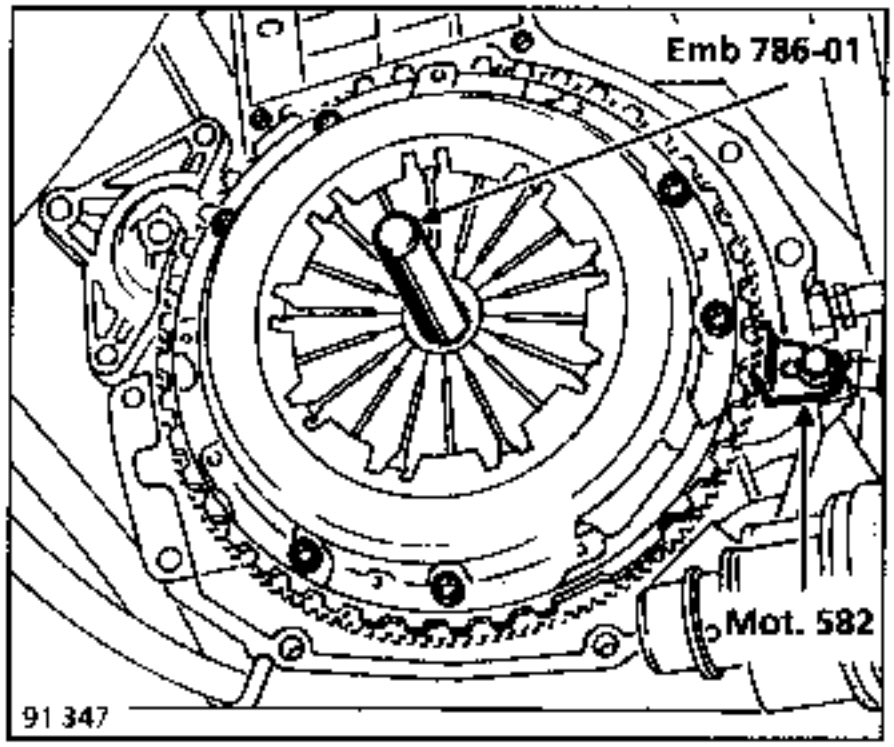
Fit the disc with the offset on its hub (A) towards the gearbox.



CENTRING THE DISC

The disc is centred using:

- the dummy bearing supplied with the clutch kit for NG gearbox;
- tool Emb.786-01 for the UN gearbox.



Screw up the clutch unit securing bolts evenly then torque tighten them.

Remove clamp Mot.582.

Lightly grease the pad bearing area on the diaphram with MOLYKOTE BR2 grease.

After refitting the gearbox, check the clutch clearance and adjust it if necessary.

REPLACING

To carry out this operation the gearbox must first be removed.

REMOVAL

Remove the pad by tilting the fork.

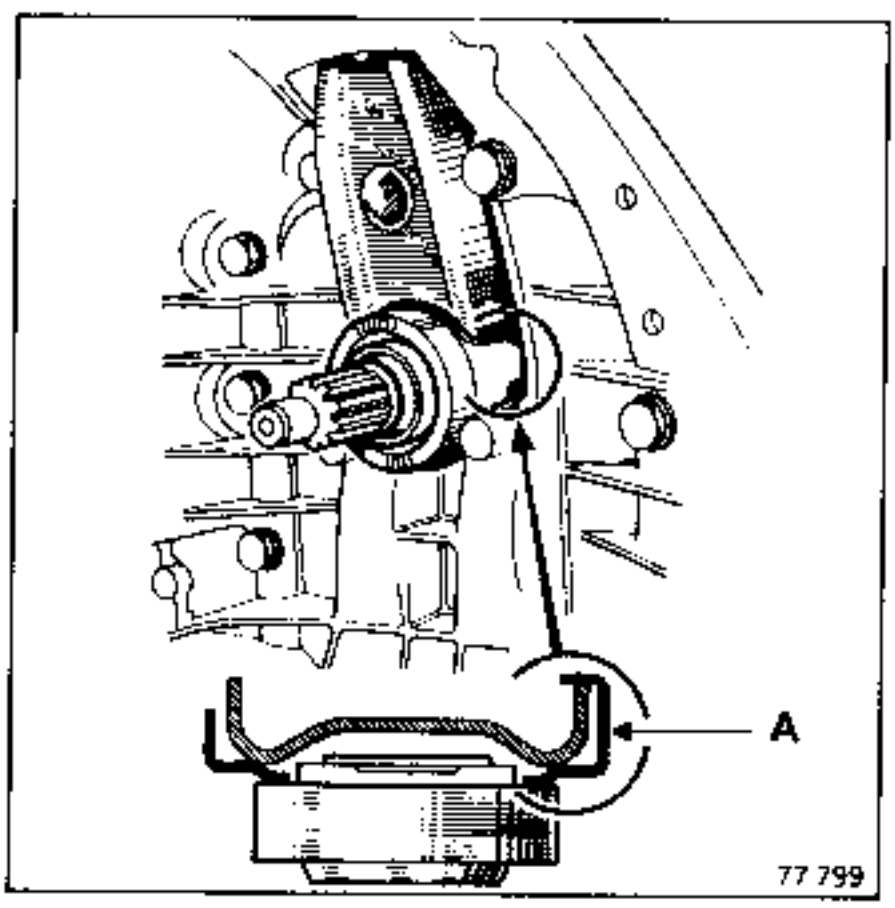
REFITTING

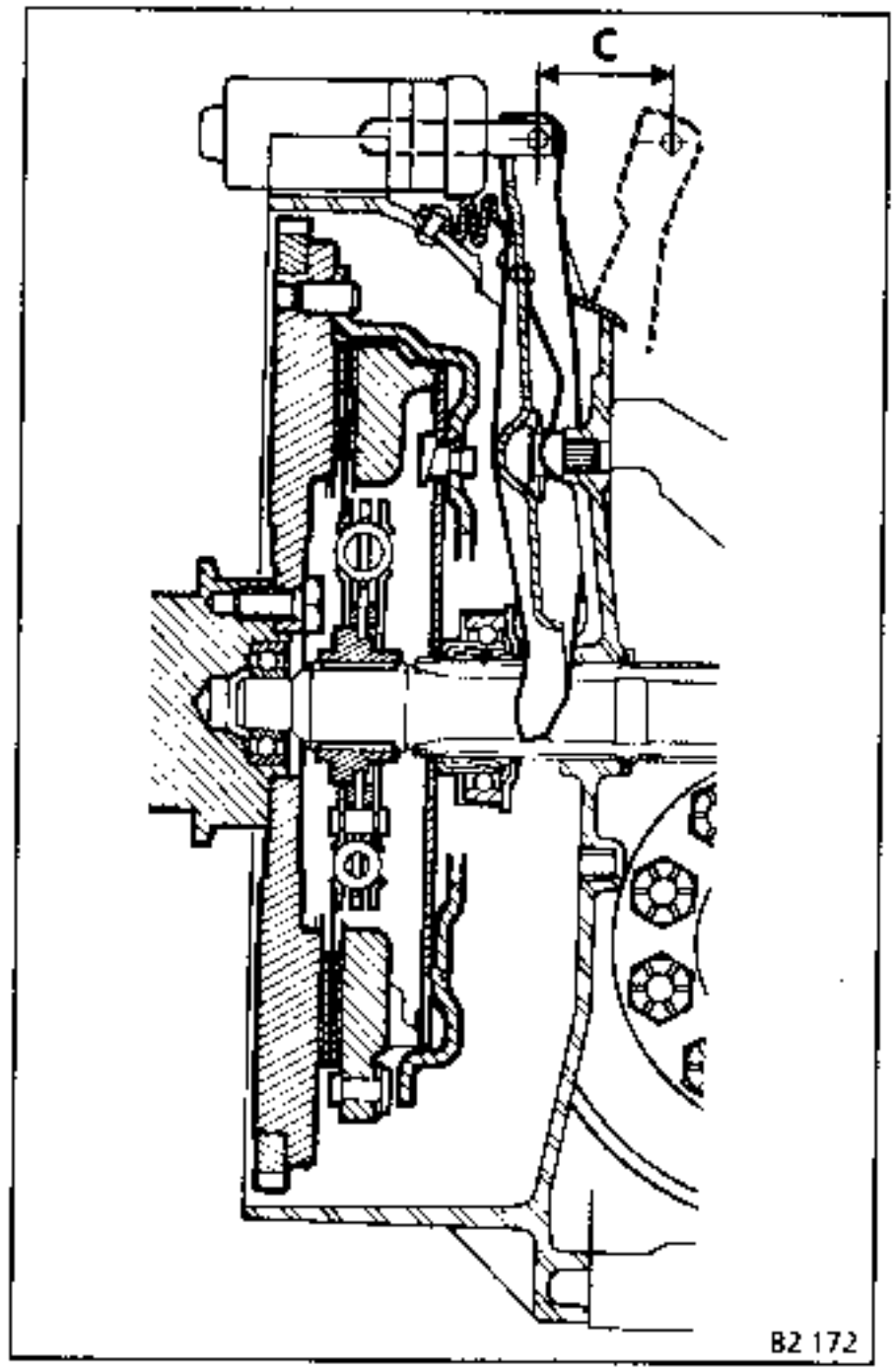
Lightly grease the fork pads and pivot with MOLYKOTE BR2.

Fit the withdrawal pad to the guide tube, placing tab (A) in the fork.

Check travel C on hydraulically controlled clutches:

C = 11 mm





REPLACING

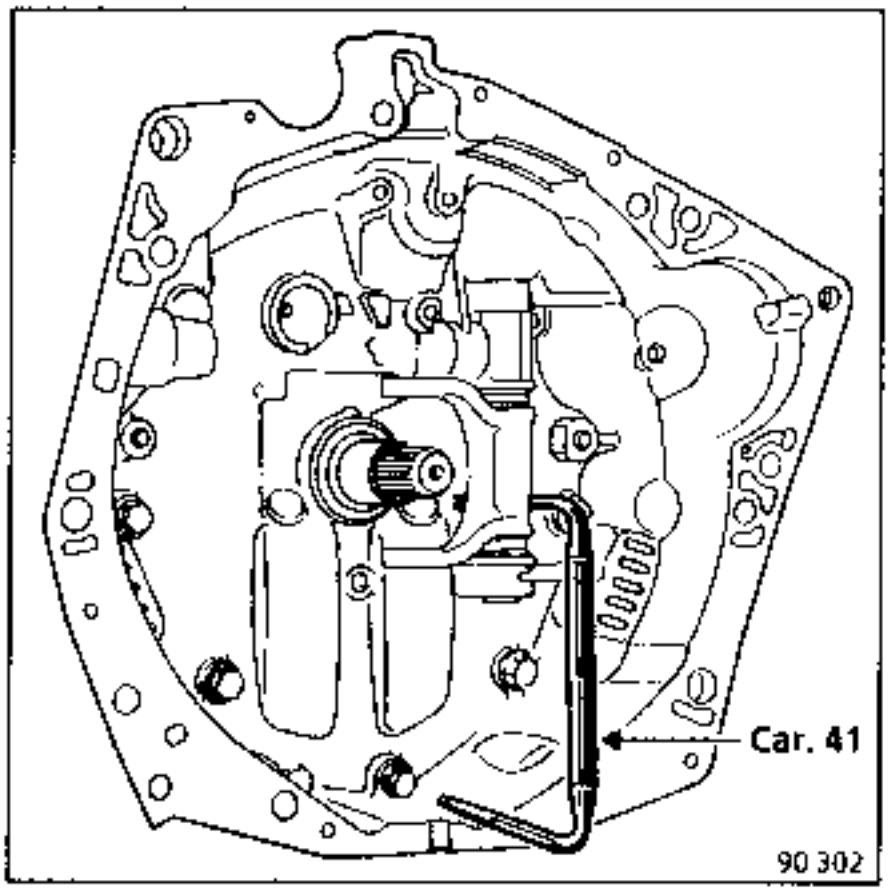
J636 - J637 - S637 - J635 - S635

This operation is performed after the gearbox has been removed.

ESSENTIAL SPECIAL TOOLING	
B.Vi. 606	Set of drifts
Car. 41	Angled drift

REMOVAL

Knock out the roll pins holding the fork half way using tool B.Vi.606 then complete with tool Car.41.



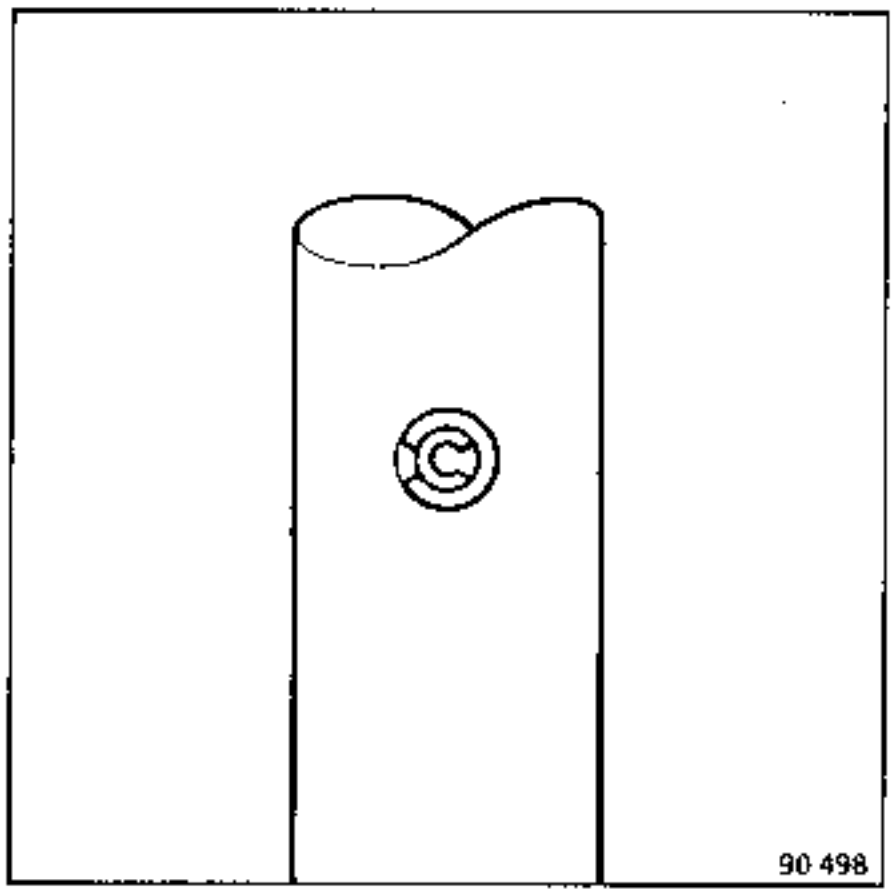
REFITTING

Lightly coat the fork shaft with MOLYKOTE BR2 grease.

Engage the shaft (fitted with a rubber seal) and fit the fork and two plastic spacers.

Ensure that the fork is fitted facing the correct direction: the boss should be at the clutch casing end.

Align the holes in the fork with those in the shaft and fit the roll pins.



Ensure that the roll pins are fitted correctly: the slots on the roll pins must be at right angles to the fork shaft and opposite one another.

REPLACING

This operation is performed after the gearbox has been removed.

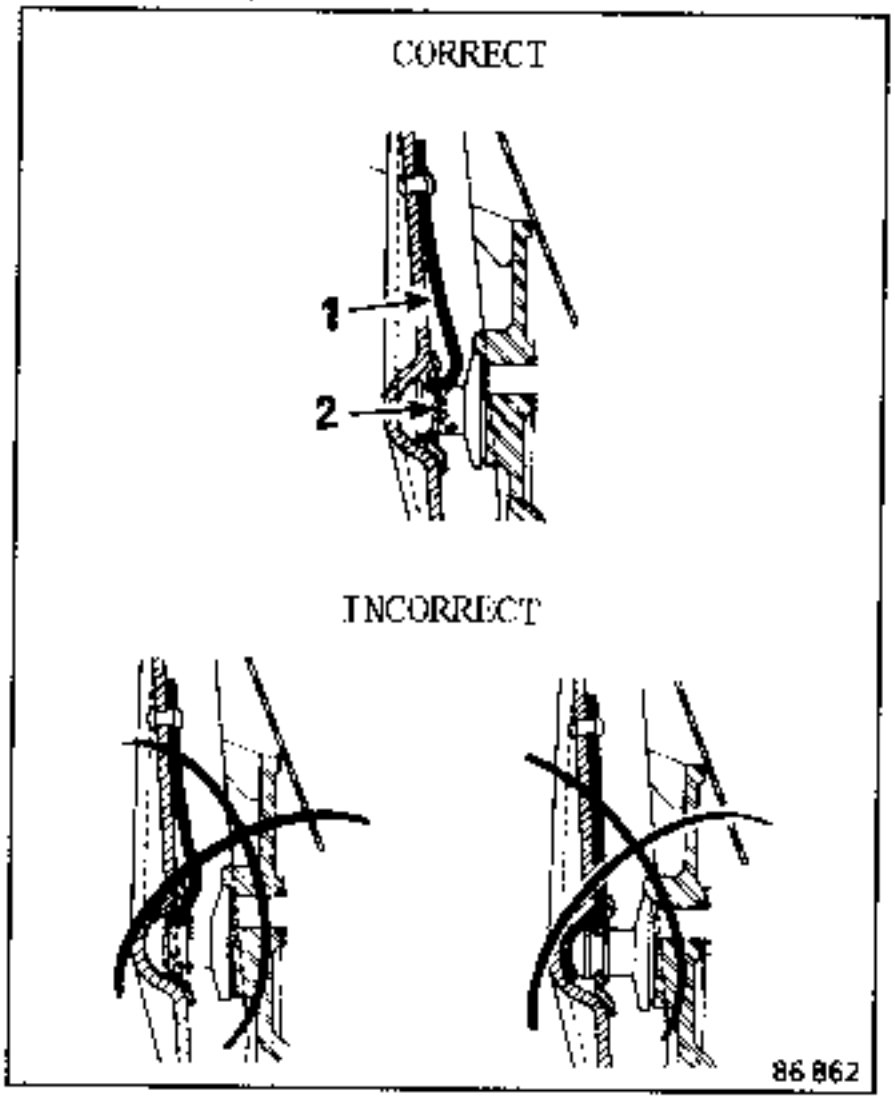
REMOVAL

Move the fork towards the outside of the gearbox.

REFITTING

Fit the fork in place, placing spring (1) behind cup (2).

Make sure that it operates correctly.



REPLACING

This operation is performed after the gearbox and clutch casing has been removed.

Please consult the section on separating the casings in "B.V.NG" or "B.V.EX".

The outer bearing cage has a lip seal requiring special precautions to be taken on assembly. This seal is lubricated from above by an orifice in the casing.

To replace the bearing in the casing the clutch shaft has to be removed if the bearing face is not correct since the rollers are in direct contact with the shaft.

TIGHTENING TORQUES (in daNm)	
Casing bolts:	
Ø 10	3,5
Ø 8	2,5

REMOVAL

Take out the guide tube on the press.

A guide tube cannot be re-used once it has been removed on the press.

REFITTING

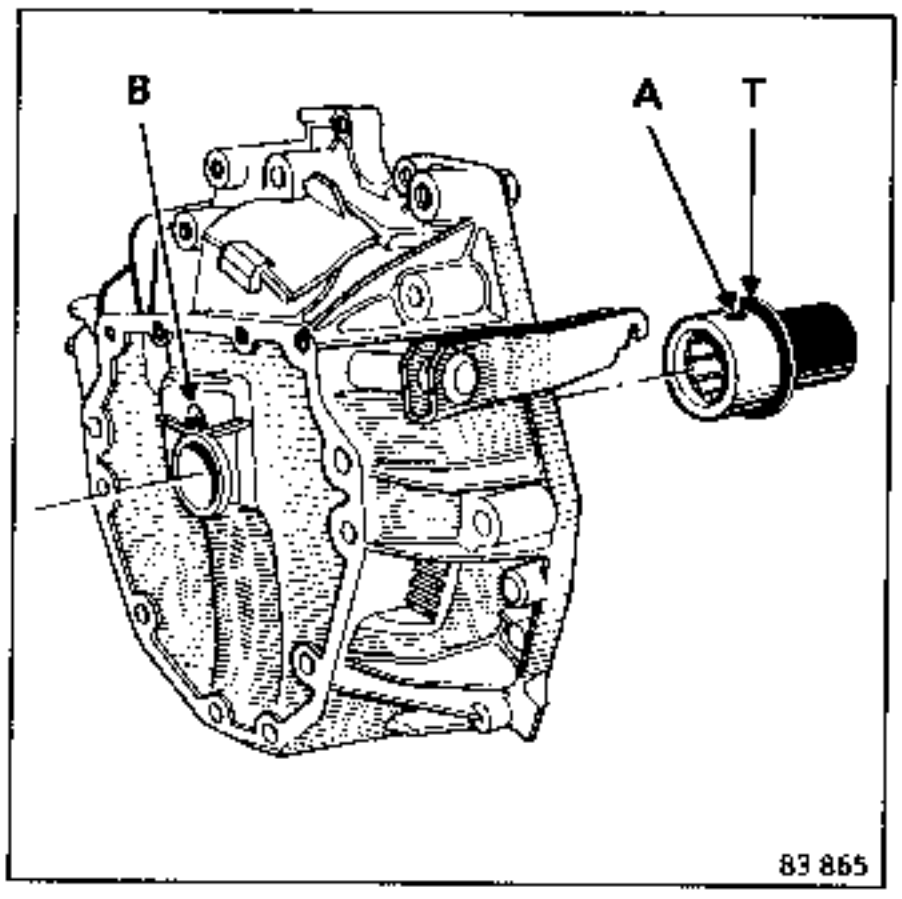
Put a film of MOLYKOTE BR2 grease on the walls of the bore.

Place O ring seal (T) on the guide tube.

Offer up the guide tube to the clutch casing and align the bearing lubricating hole in the guide tube opposite the hole in the clutch casing.

Insert the guide tube on the press until it is fully inserted.

Check that guide tube lubricating hole (A) is opposite hole (B) in the clutch casing.



Lubricate the seal before fitting the shaft.

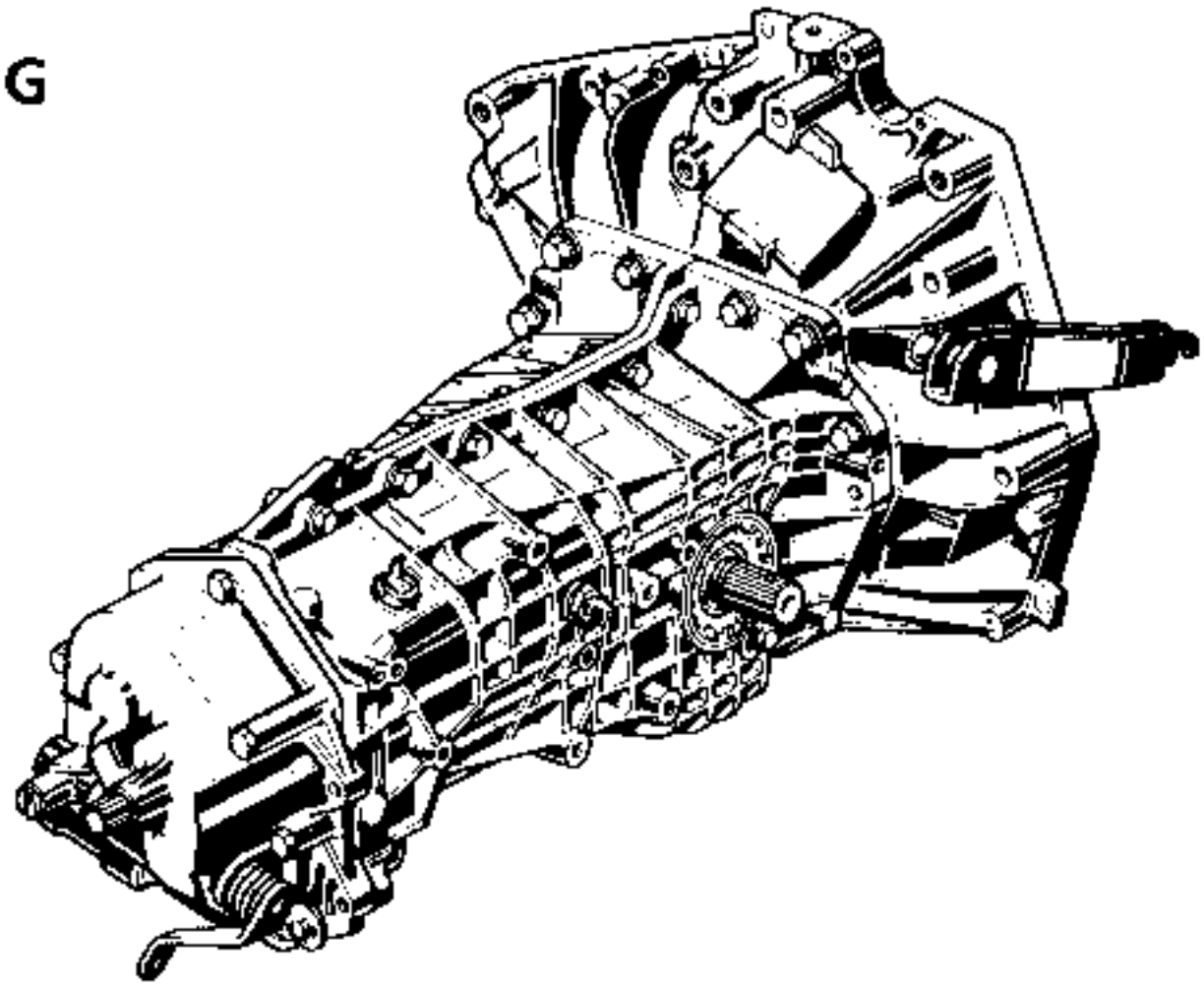
Place adhesive paper on the shaft splines so as not to damage the seal lip .

Fit the casing in place, having greased the seal with PERFECT SEAL.

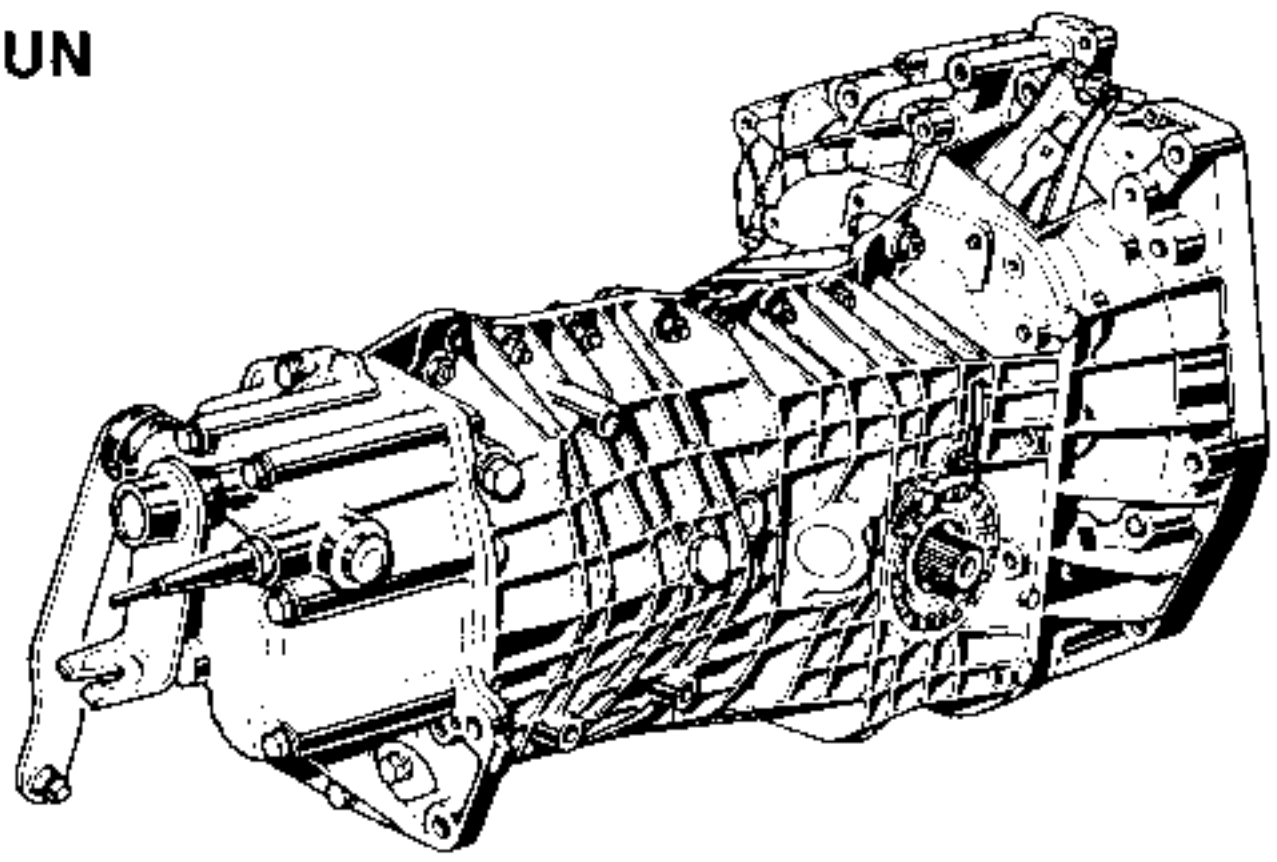
Torque tighten the bolts as specified.

Coat the guide tube with MOLYKOTE BR2 grease.

NG



UN



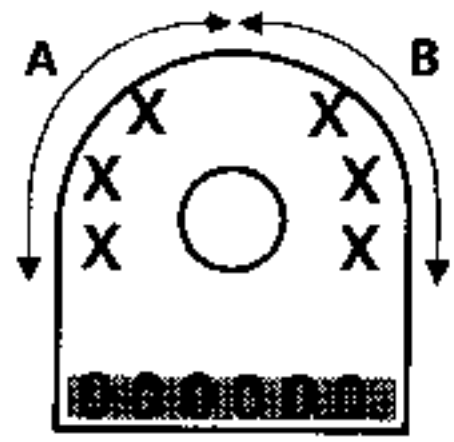
ESPACE vehicles are equipped with NG3-NG7 and UN1 gearboxes.

Please consult repair manuals BVNG and BVUN for the complete overhaul of these components.

This chapter, therefore, deals with the following operations:

- removing-refitting the gearbox;
- removing-refitting the 5th speed gear assembly in situ;
- removing-refitting the external gear controls.

Gearbox type (A), suffix (B) and the fabrication numberare stamped on an identification plate located on the lefthand side of the rear casing.



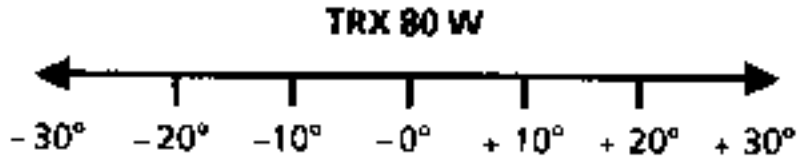
VEHICLE TYPE	J637 05 S637 05	J636 15	J637 08	J635 05 S635 05 J634 05	J638 05
TYPE	NG3	NG3	NG7	NG3	UN1
SUFFIX	079	077	007	095	021

Gearbox		Gearbox Ratios						Final Drive	Speed at 1000 rpm in km/h		Speedo Drive
Type	Suffix	1 st	2 nd	3rd	4 th	5th	Reverse	Ratio	4 th	5 th	
NG3	079	11/45 0,244	17/37 0,459	22/31 0,709	33/34 0,970	36/31 1,161	11/39 0,282	9/32 0,290	30,29	36,24	6/18
NG3 NG7	077 007	11/45 0,244	17/37 0,459	22/31 0,709	33/34 0,970	36/31 1,161	11/39 0,282	9/34 0,264	28,56	34,11	6/18
NG3	095	11/45 0,244	17/37 0,459	22/31 0,709	33/34 0,970	36/31 1,161	11/39 0,282	9/29 0,310	33,42	39,99	6/18
UN1	021	11/45 0,297	17/35 0,485	21/29 0,724	27/28 0,964	39/32 1,218	11/39 0,282	9/35 0,257	28,69	36,28	26/21

The gearboxes are equipped with synchronisers:

RENAULT: 1st-2nd
BORG-WARNER: 3rd-4th-5th

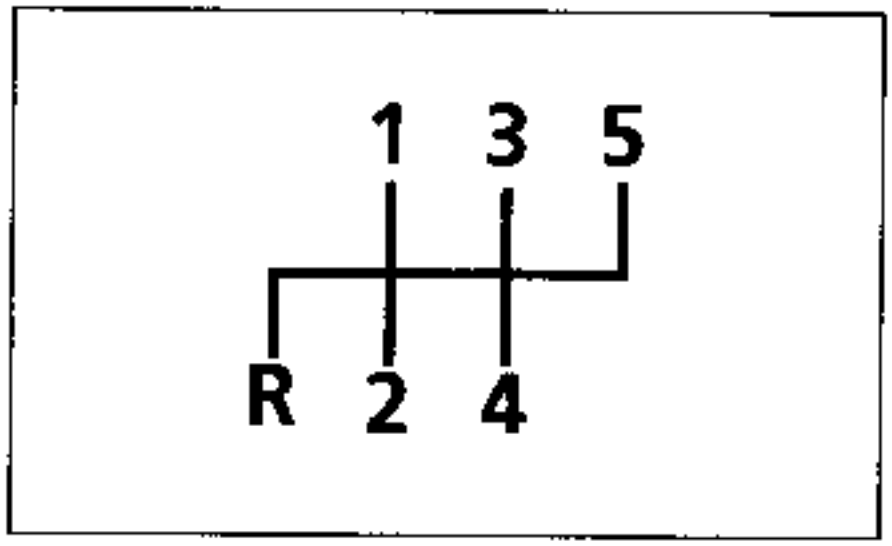
OIL



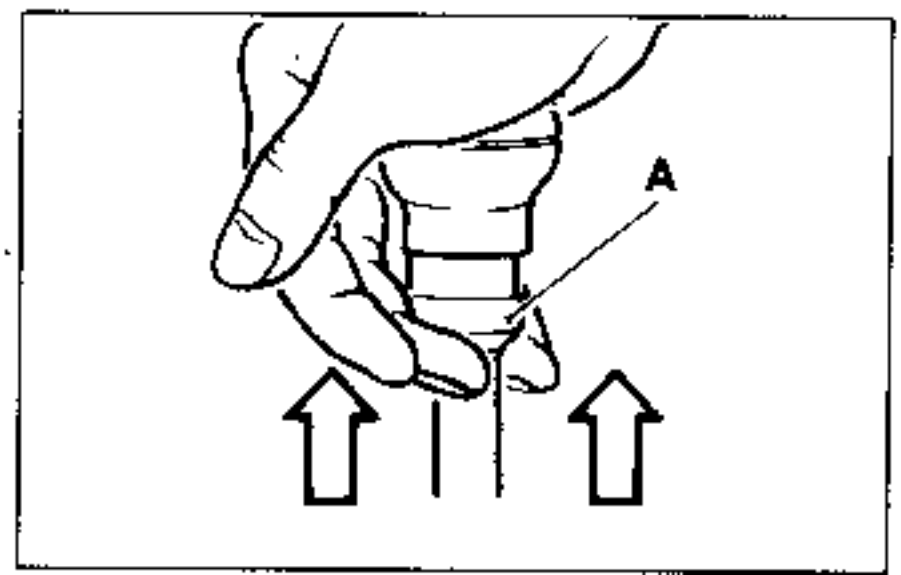
CAPACITY

NG3 : 2,2 l
NG7 : 2,4 l
UN1 : 3 l

GEAR CHANGE PATTERN



To select reverse, lift ring (A) and move the lever.



SPECIAL PRECAUTIONS

TRANSELF TRX 80 W oil is a high technology product requiring certain precautions to be taken in order to prevent the ingress of water which, even in very small quantities, would spoil the quality of the oil and jam the gearbox.

Only use TRANSELF TRX 80 W oil when topping up the oil in the gearbox.

STORAGE AND USE

Particular care must be taken as regards sealing when using open drums in order to prevent any material or water entering it.

In particular:

1) The drums must be stored away from inclement weather (rain, snow, splashes) and horizontally.

2) If oil is removed using a syringe, the drum must be closed again after use.

3) Never set down drums near a washing bay.

4) Never transfer oil into larger containers.

PRESSURE WASHING

1) In situ:

Block off the gearbox vent-to-atmosphere breather.

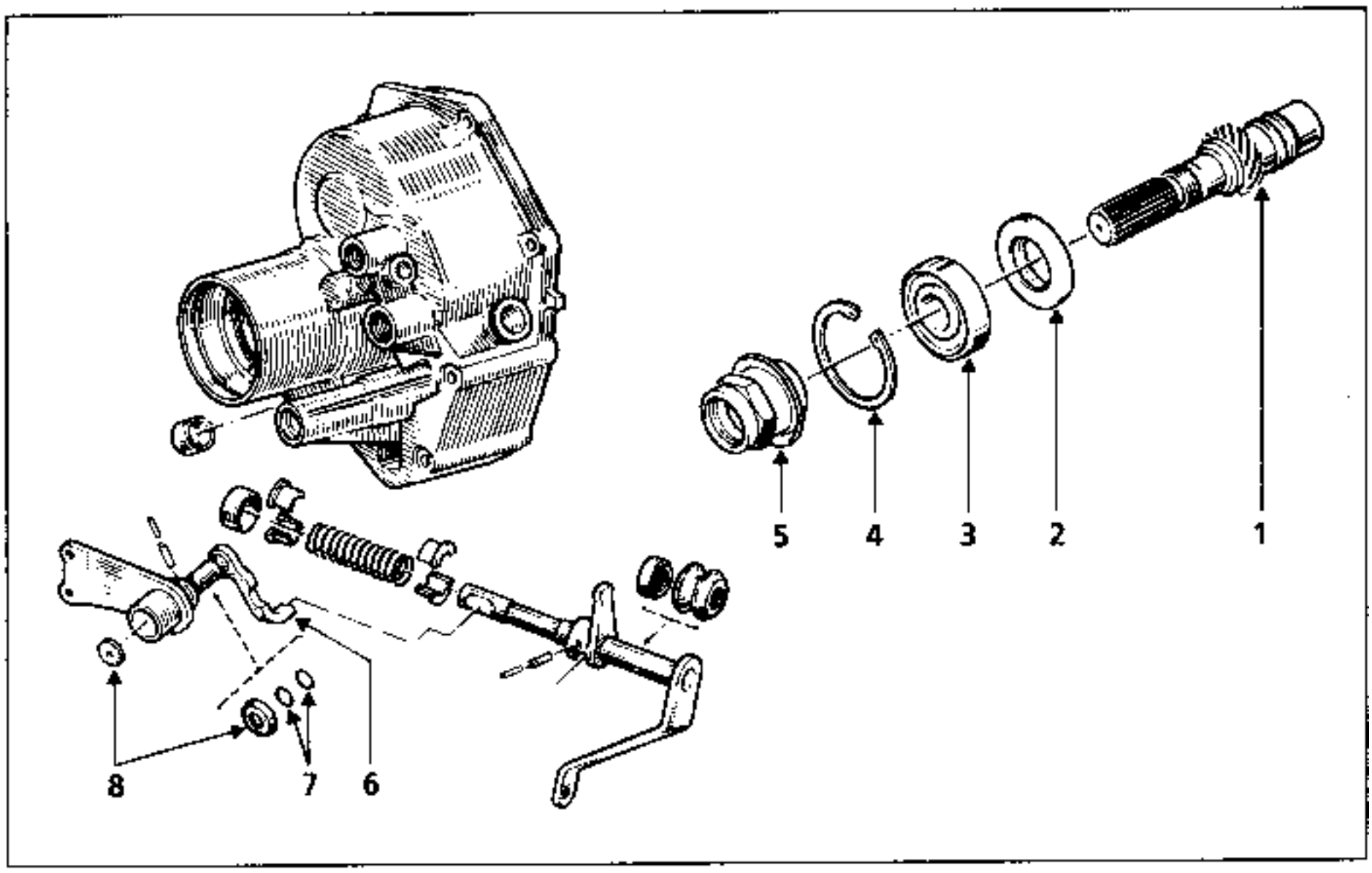
2) Gearbox removed:

It is essential to blank off the apertures correctly in order to prevent water entering the gearbox.

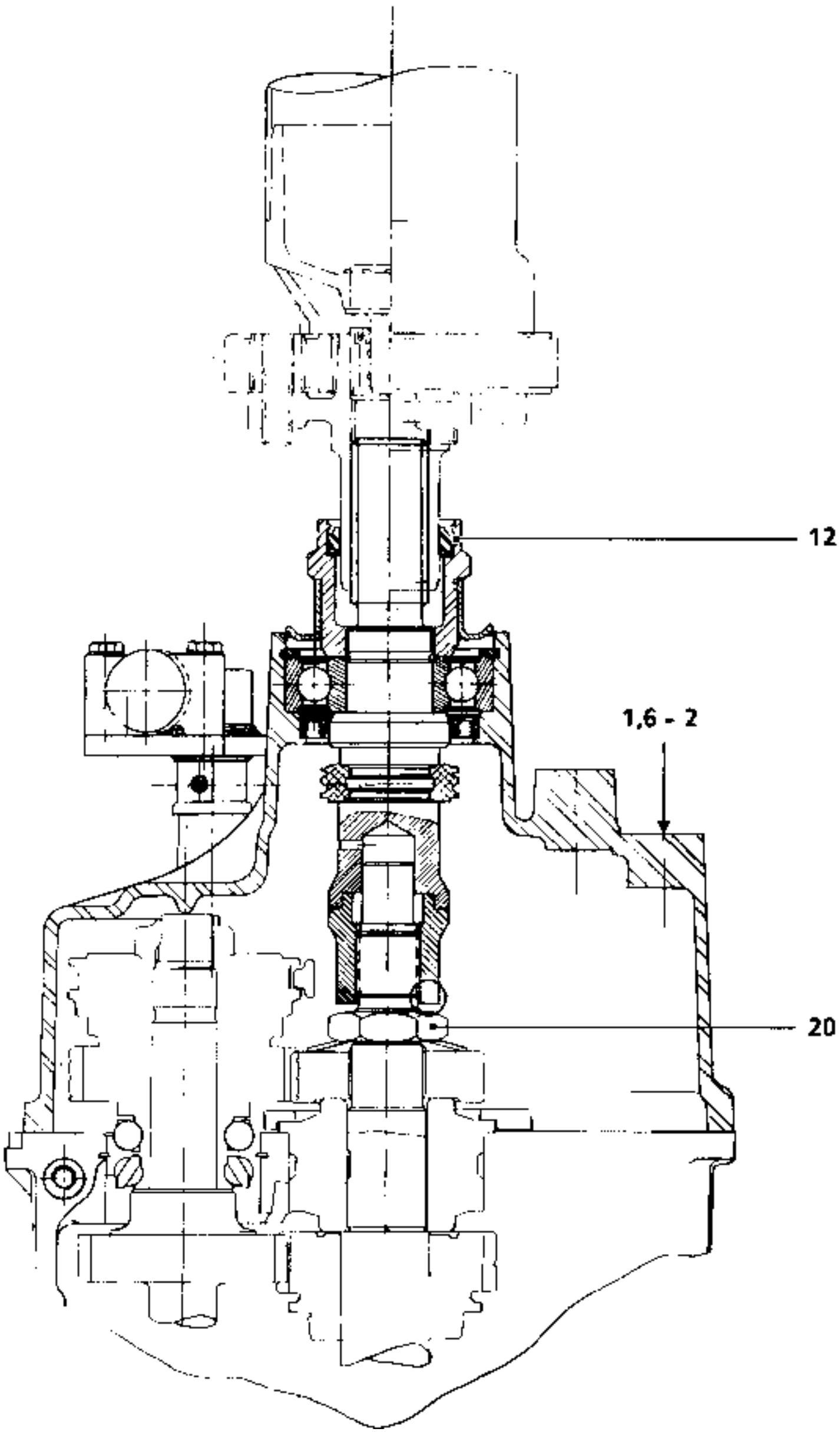
SPECIAL POINTS (for gearbox fitted to ESPACE)

- Special gearbox output
- Specially adapted speedo ratio
- 9 x 34 final drive ratio
- No dog clutch device

For operations not covered in this section, please consult sub-section 21 of MR.291 and BV.XG.



1 Output shaft
2 Lip seal
3 Bearing
4 Circlip
5 Sealing end piece
6 Selector lever
7 O ring seal
8 Lever sleeve
Ball joint cover mounting


12
1,6 - 2
20

Type	Packaging	Part No	Units
MOLYKOTE BR2	1 kg tin	**77 01 421 145**	Sunwheel splines. Clutch fork pivot Clutch withdrawal pad guide Clutch fork pads
MOLYKOTE 33	100 g tube	**77 01 028 179**	Selection control articulation points
LOCTITE SCELBLOC (locking and sealing resin - permits release)	24 cc bottle	**77 01 394 072**	5th speed fixed gear 5th speed dog } UN Gearbox
LOCTITE FRENBLOC (locking and sealing resin - cannot be released).	24 cc bottle	**77 01 394 071**	Primary shaft nuts Secondary shaft nuts Reverse gear switch bolt
Loctite 518	24 ml syringe	**77 01 421 162**	Casing joint faces
PERFECT SEAL LOWAC (coating fluid for seals)	100 g tube	**77 01 417 404**	Clutch and rear casing paper type seal
CAF 4/60 THIXO	100 g tube	**77 01 404 452**	Threaded plugs and switches Locking ball plugs Ends of roll pins on driveshafts

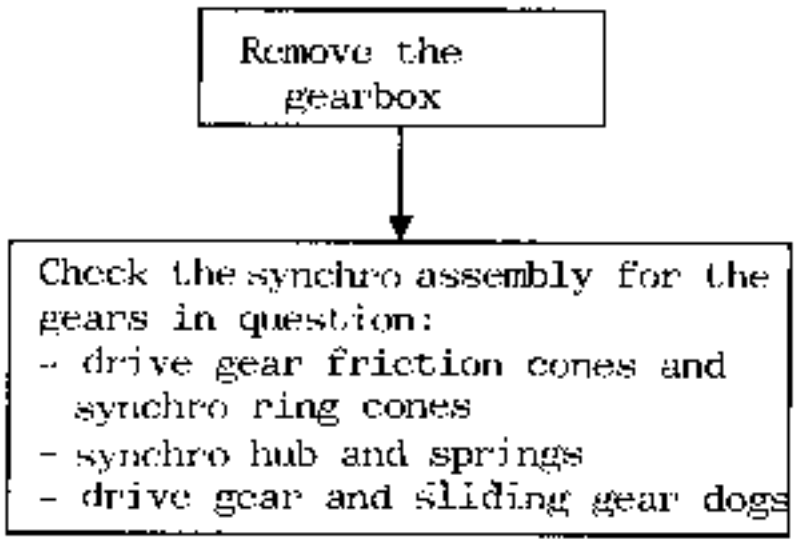
Parts to be replace systematically

When they have been removed:

- roll pins
- primary and secondary shaft nuts
- paper type seals
- speedo drive (NG gearbox).

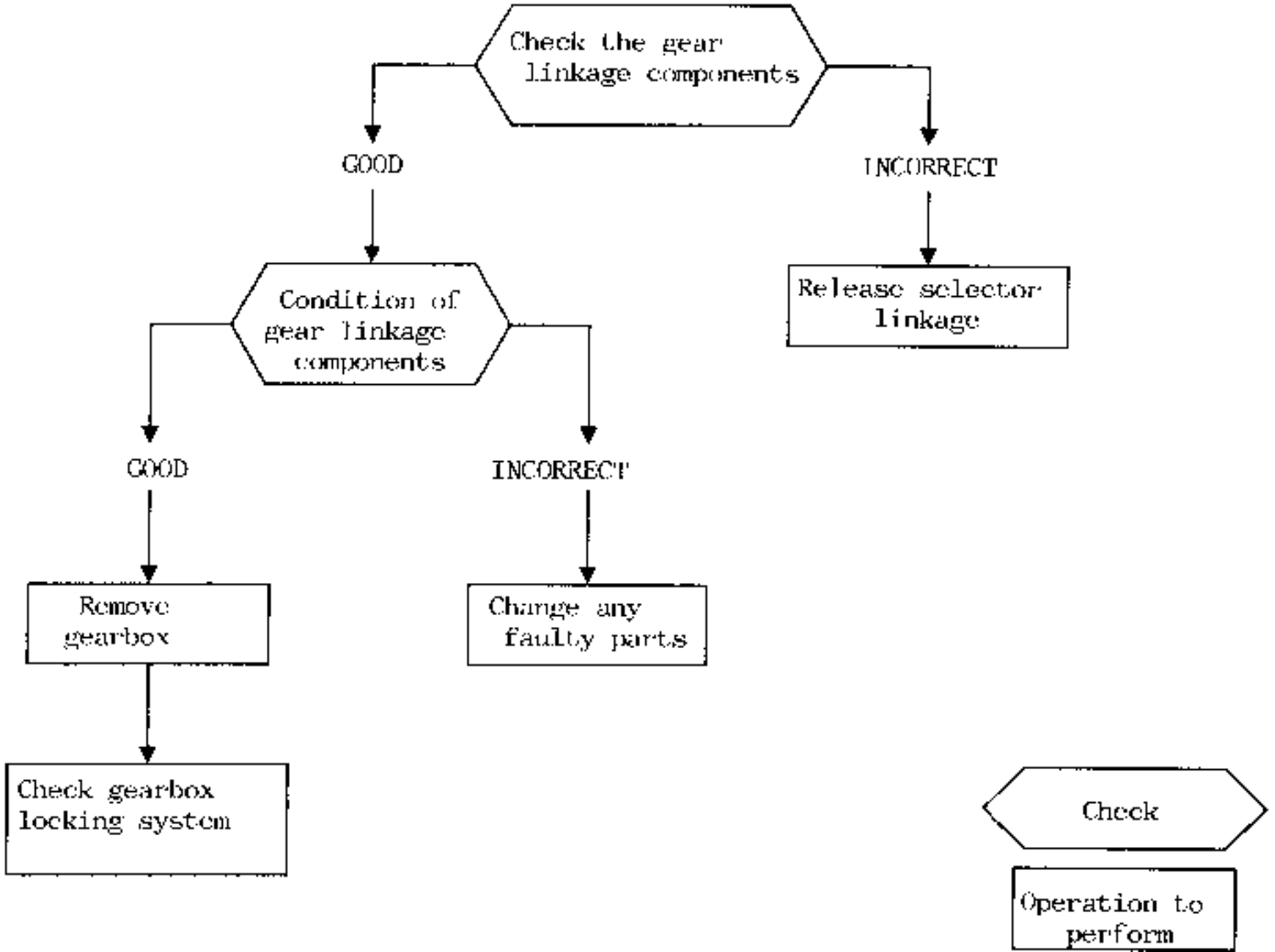
GRATING WHEN ONE GEAR ENGAGED

(after checking the clutch)

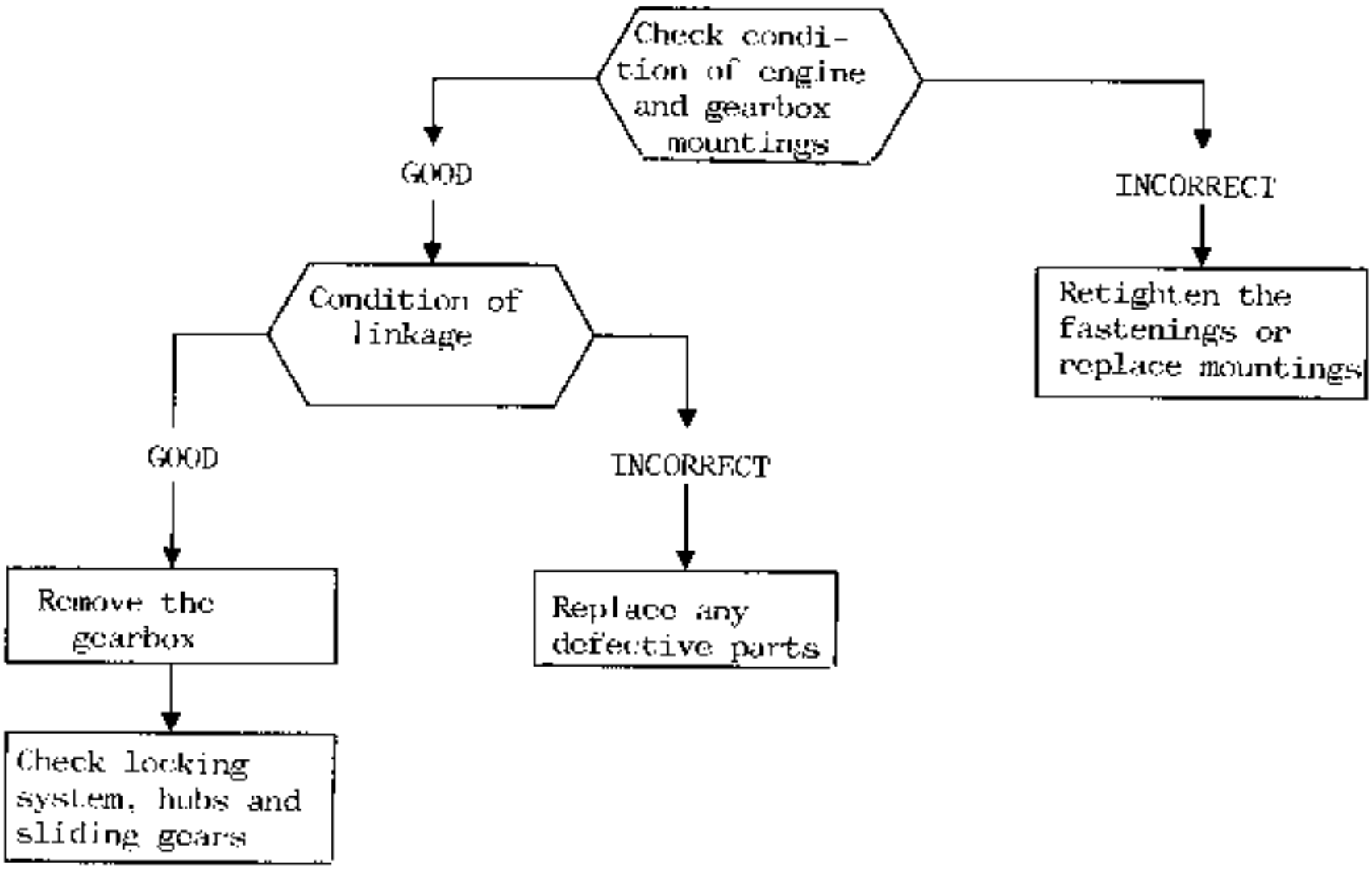


IMPOSSIBLE TO ENGAGE ANY GEAR

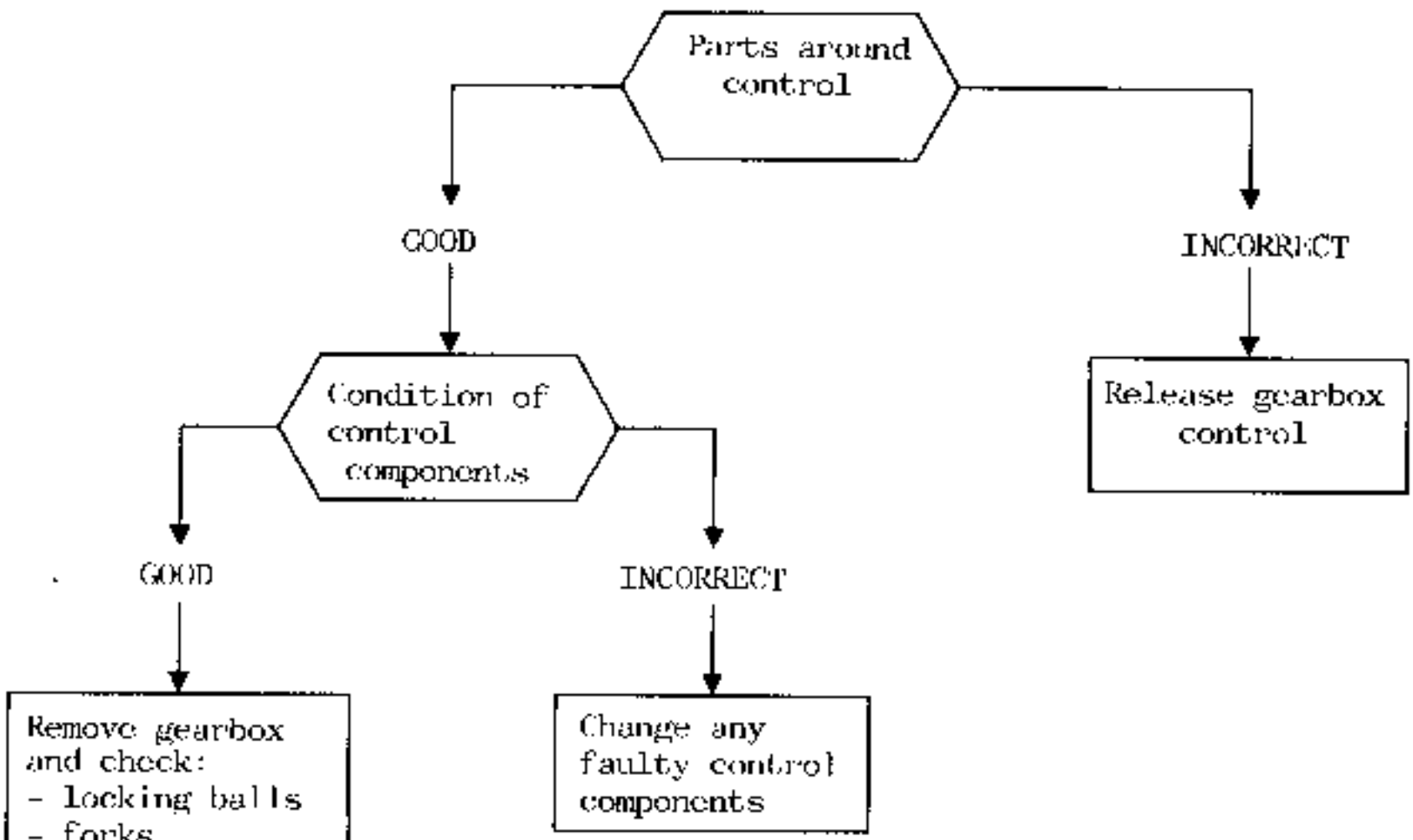
(after checking the clutch)



SLIPPING OUT OF GEAR



LOCKING IN GEAR



ESSENTIAL SPECIAL TOOLING	
B.Vi.31-01	Set of 5 mm Ø drifts
T.Av.476	Ball joint extractor
T.Av.603	Front axle spacer

TIGHTENING TORQUES (in daNm)	▽
Wheel bolts	9
Upper ball joint nuts	6.5
Link arm or steering ball joint nuts	4
Gear selector control nut	4.5
Girling brake calliper guide bolts	3.5

The gearbox can either be removed:
- with the engine (see engine section);
- or alone, using a unit support jack and its pins (from under the vehicle).

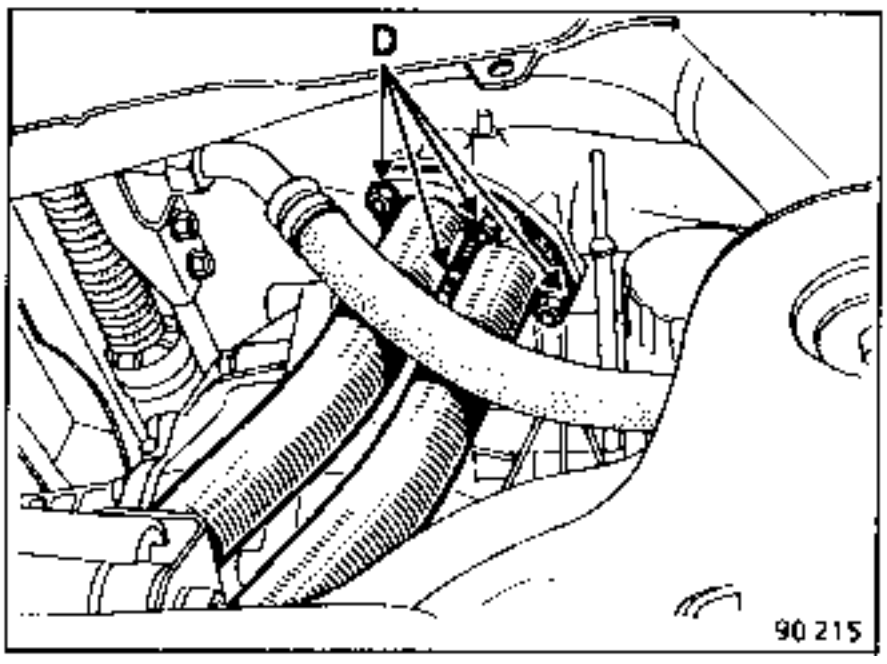
The gearbox does not have to be drained to carry out this operation because there are the seals at the sun wheels.

REMOVAL

Place the vehicle on a hydraulic lift.

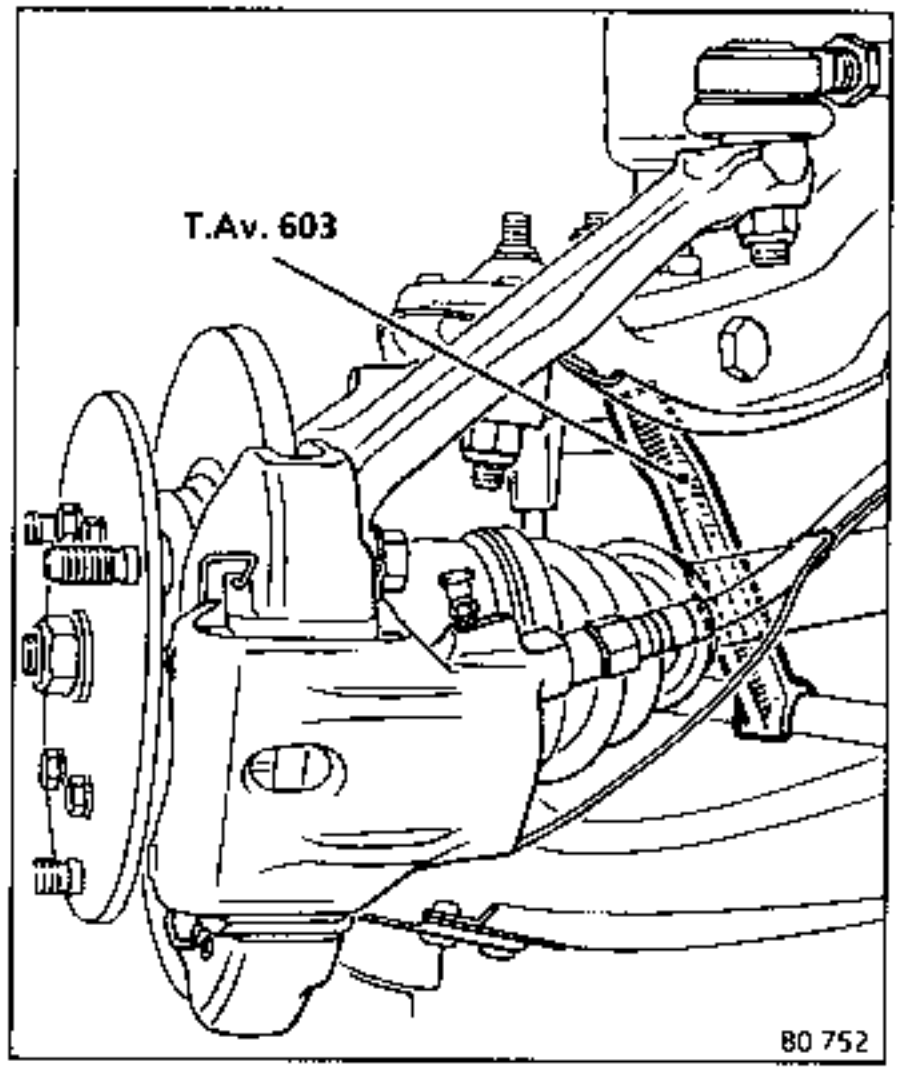
Disconnect:
- the battery;
- the clutch cable.

Remove nuts (D) securing the exhaust downpipe.



Under the vehicle:

Fit retaining spacers T.Av.603 between the shock absorber lower securing pins and the suspension lower arm hinge pins.

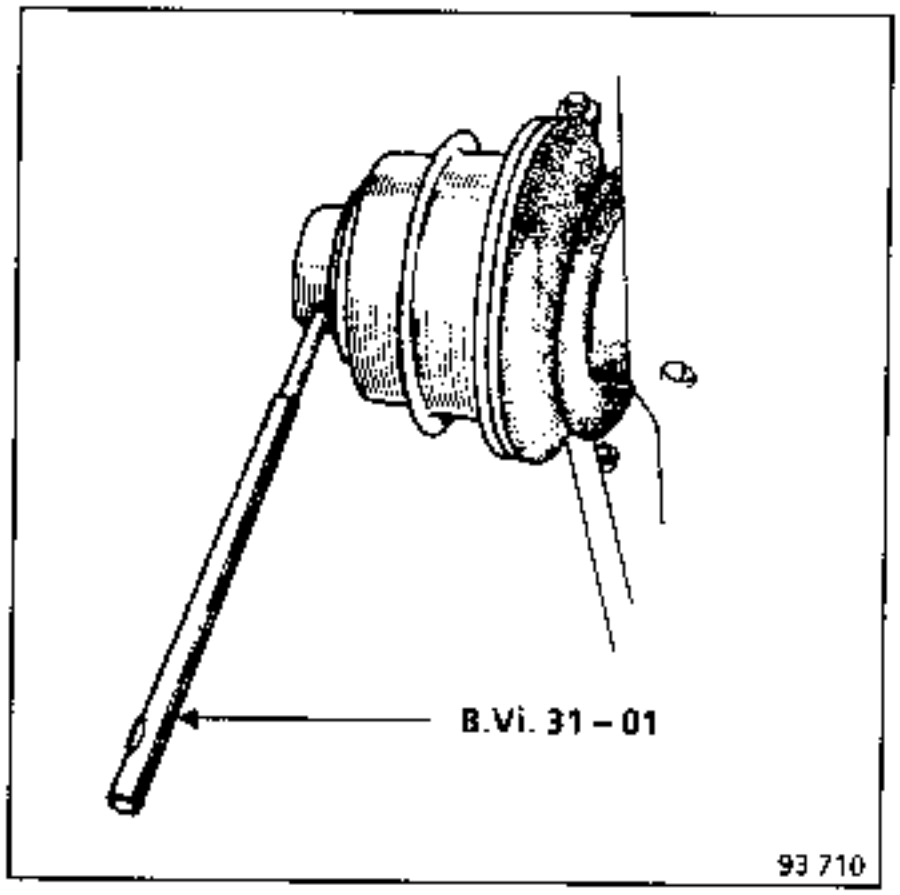


Slacken the front wheels.

Place the front of the vehicle on stands and check that spacers T.Av.603 stay in place.

Remove:
- the front wheels;
- the brake callipers.

Remove the roll pins securing the driveshafts to the sunwheels using drifts B.Vi.31-01.

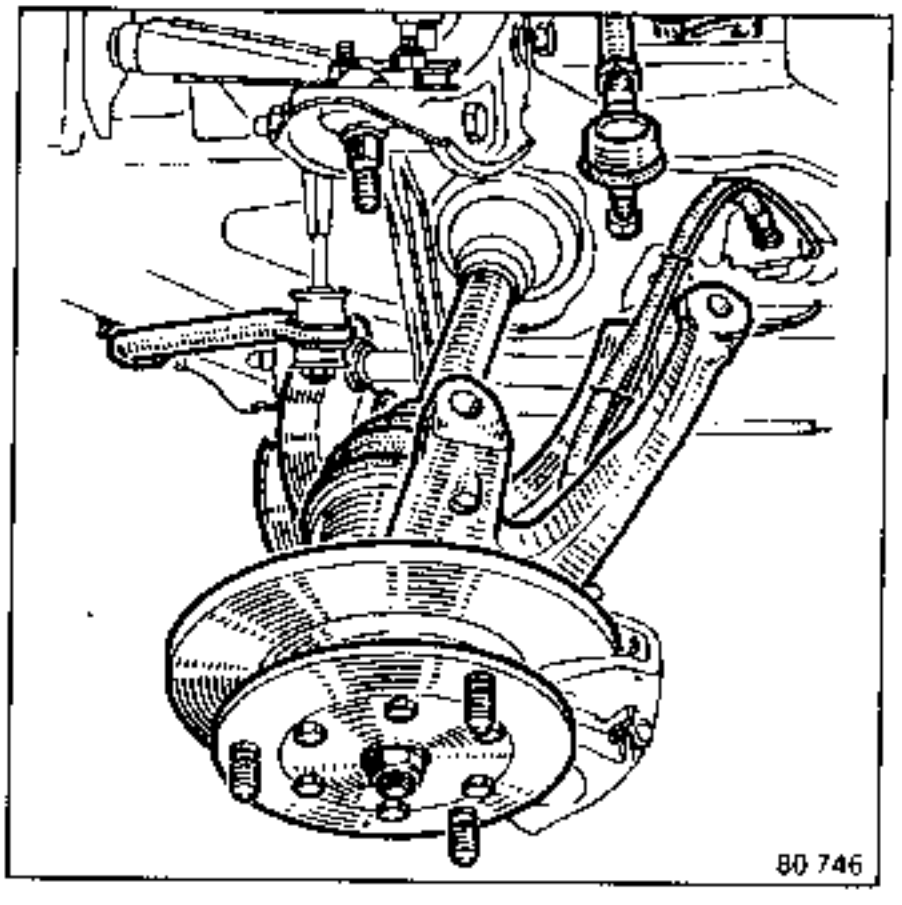


Unfasten and remove:

- the nut from the steering ball joint and the cone using extractor T.Av.476;
- the nut from the suspension upper ball joint and the cone using T.Av.476.

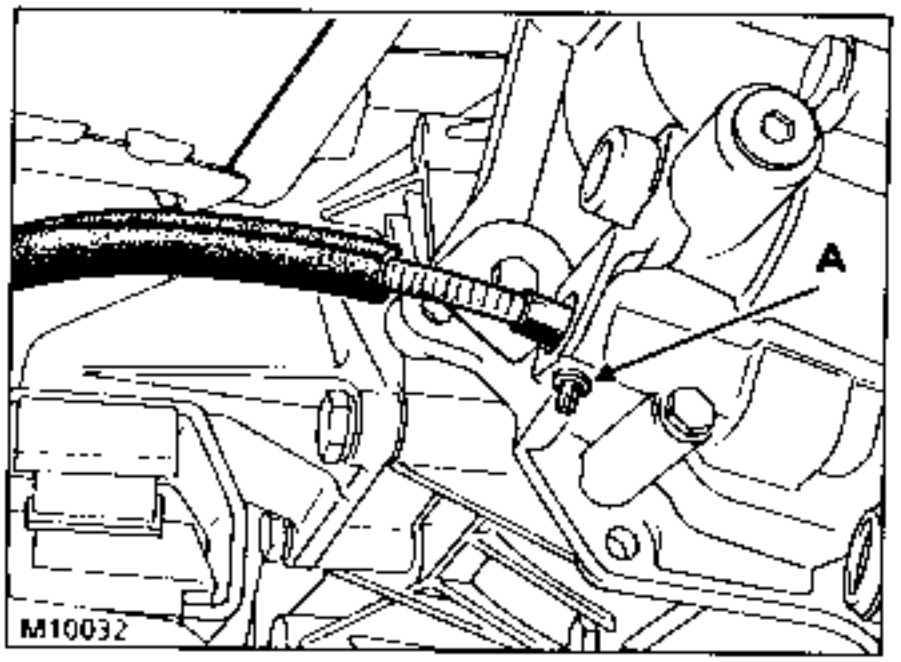
Tilt the stub-axle carrier, releasing the driveshaft from the sunwheel.

Operate in the same way for the other half-axle.

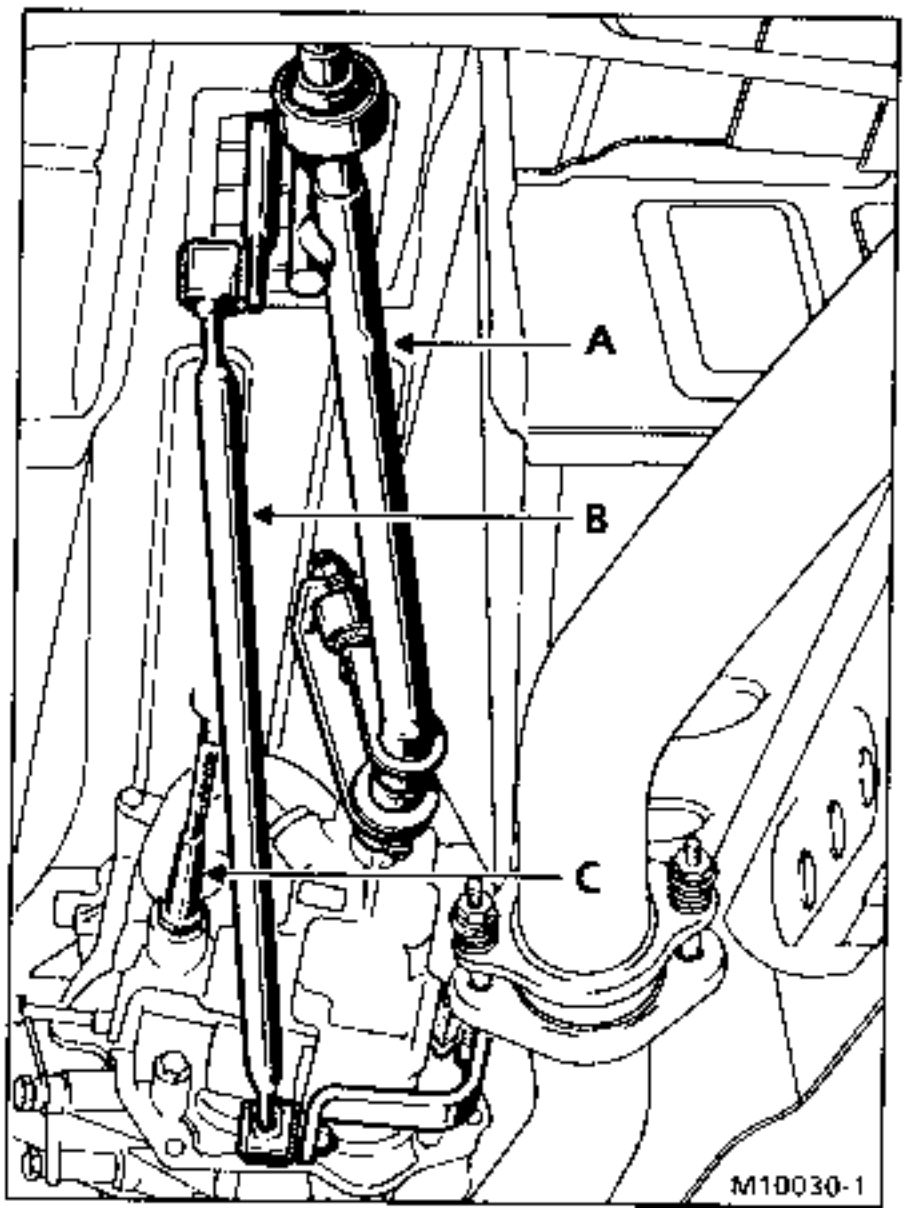


Disconnect:

- the reversing light feed wires;
- the speedometer cable, after removing roll pin (A).

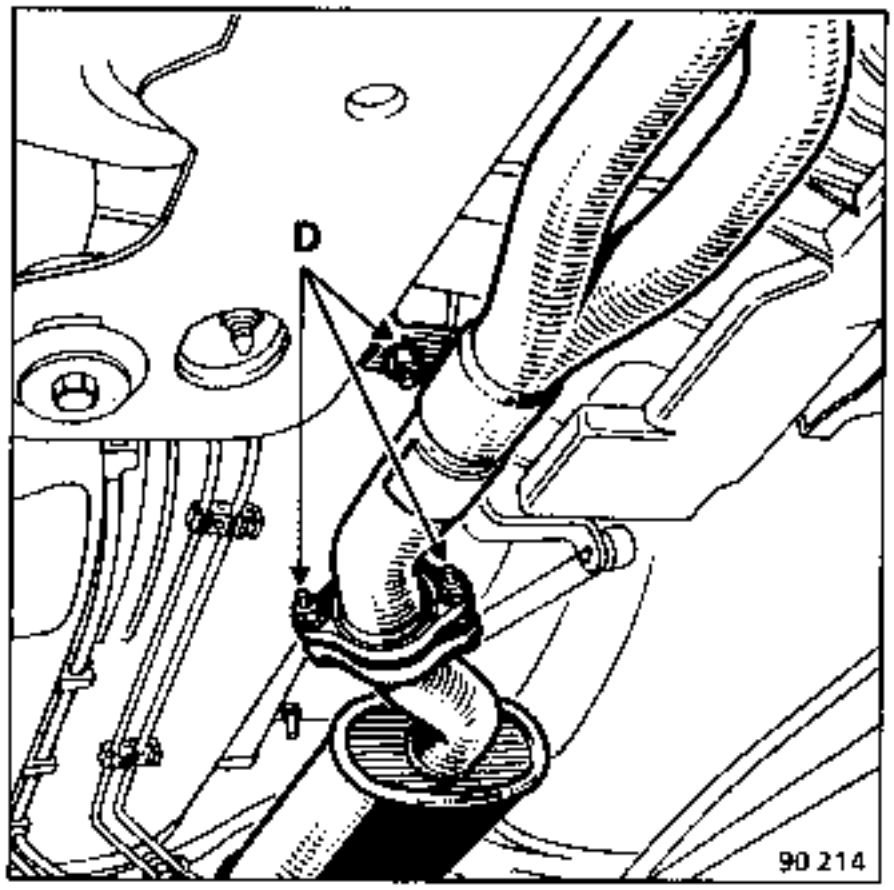


- Disconnect the gearbox controls:
  - at (A) the selector control;
  - at (B) the engagement link;
  - at (C) the reverse selector cable.



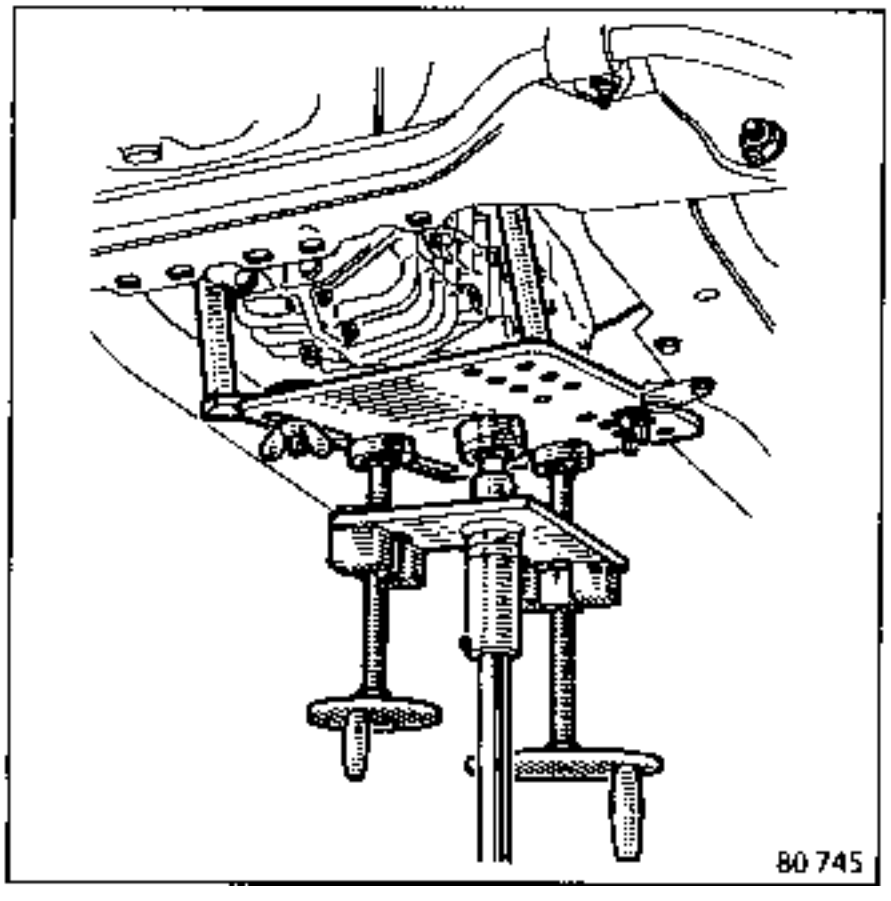
Remove:

- the AEI sensor;
- the clutch protection plate;
- the exhaust pipes (mounting D);
- the prop shaft on 4 X 4 vehicles.



Remove the bolts from the starter.

Place a unit support jack under the gearbox.



Remove:

- the bolts securing the engine to the gearbox;
- the engine mounting pads.

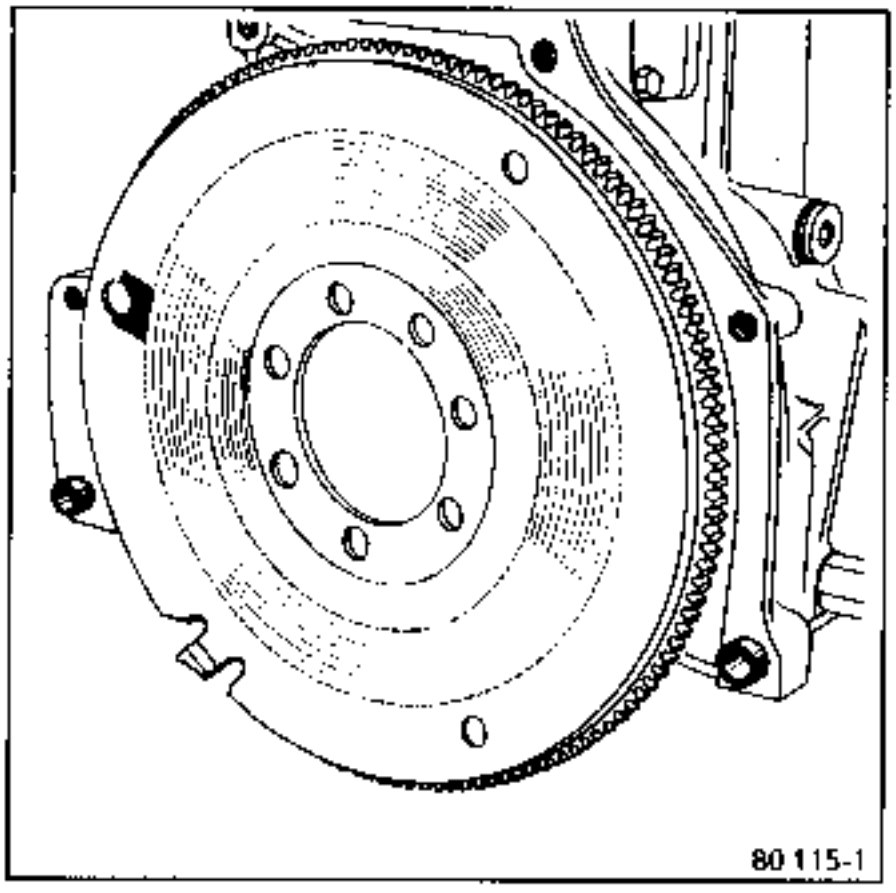
Pull the gearbox towards the rear of the vehicle, taking care not to catch it on the clutch unit.

REFITTING

Check that the locating pins are fitted.

Engage the gearbox, taking care not to catch it on the clutch unit.

Secure the gearbox to the engine and fit the right and lefthand gearbox mounting pads.

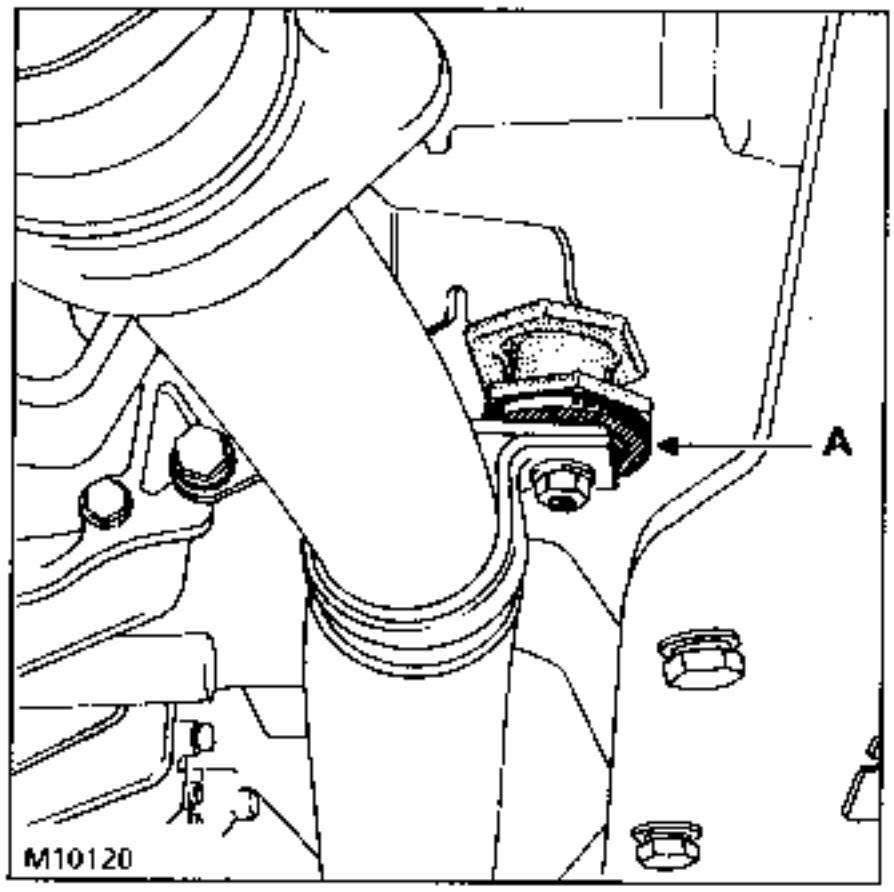


Remove the unit support jack.

Refit:

- the bolts to the starter;
- the exhaust pipes.

Remember to fit insulating washer (A) between the silentbloc bush and exhaust lug on the gearbox.



Refit:

- the clutch protection plate;
- the AEI position sensor.

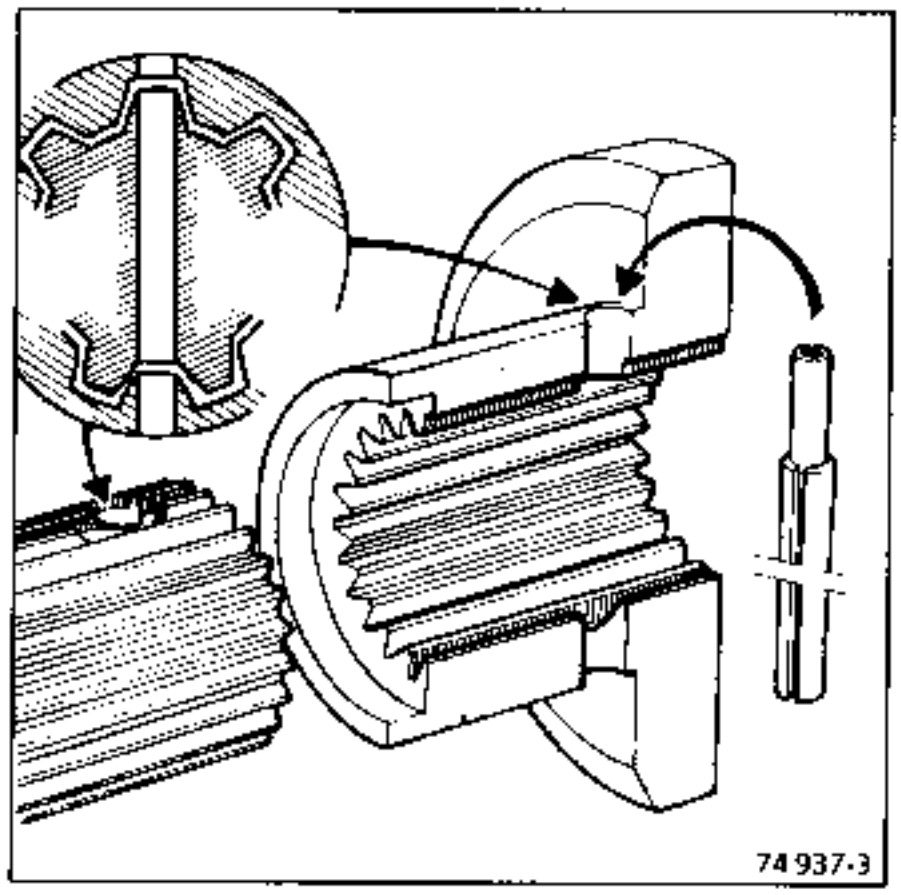
Reconnect:

- the gearbox controls;
- the speedometer cable;
- the reversing light feed wires;
- the prop shaft on 4 x 4 vehicles.

Lightly grease the sunwheel splines with MOLYKOTE BR2 grease.

Position the driveshaft in relation to the sunwheel.

Swivel the stub-axle carrier, engaging the driveshaft in the sunwheel and align the roll pin holes.



Fit two new spring pins using tool B.Vi.31-01 and place a few drops of CAF 4/60 THIXO in the holes.

Reconnect the steering and suspension ball joints and torque tighten them. Fit new nuts.

When refitting GIRLING brake calipers, coat the calliper guide bolts with LOCTITE FRENBLOC.

Fit the wheels, lower the front of the vehicle to the ground and torque tighten the wheel bolts.

Remove spacers T.Av.603.

Refit the clutch cable.

Adjust the clutch clearance.

THE WITHDRAWAL PAD IS IN PERMANENT CONTACT WITH THE DIAPHRAGM: (see section 20).

Reconnect the battery.

ESSENTIAL SPECIAL TOOLING	
B.Vi.606	Set of 6 mm Ø drifts
T.Av.476	Ball joint extractor
T.Av.603	Front axle spacer
Mot.1219	Tube cutter

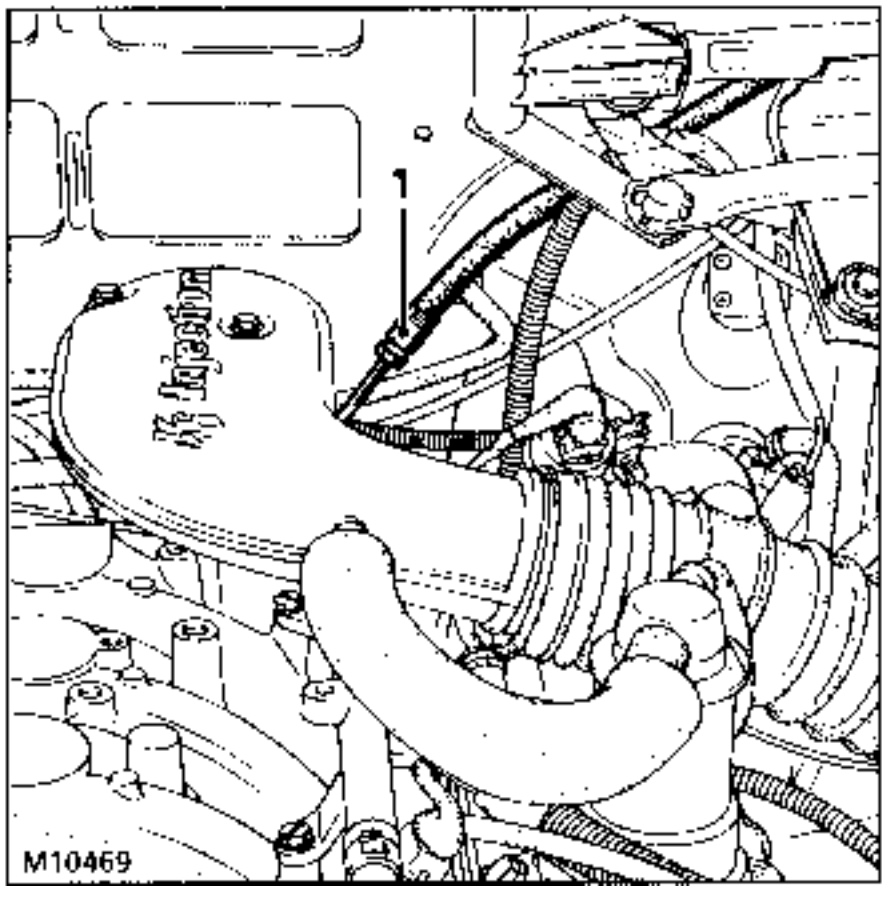
TIGHTENING TORQUES (in daNm)	
Wheel bolts	10
Upper ball joint nuts	6,5
Link arm or steering ball joint nuts	4
Gear selector control nut	4.5
Girling brake calliper guide bolt	3.5

The gearbox can either be removed:
- with the engine (see engine section);
- or alone, using a unit support jack and its pins (from under the vehicle).

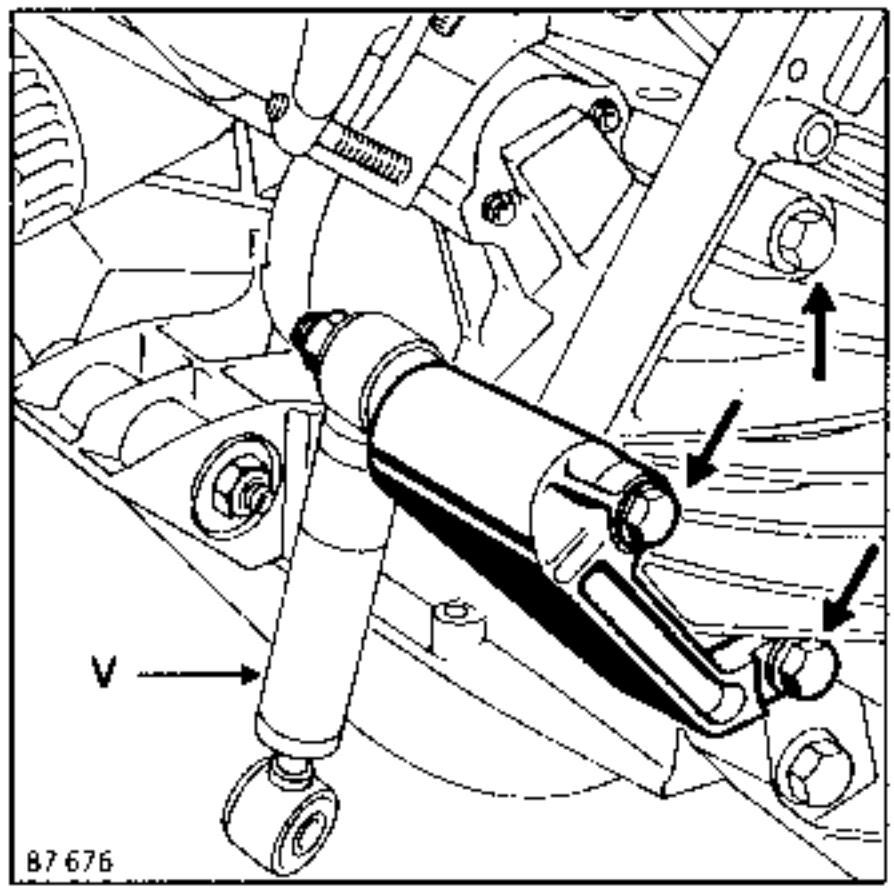
The gearbox does not have to be drained to carry out this operation since there are seals on the sunwheels.

REMOVAL

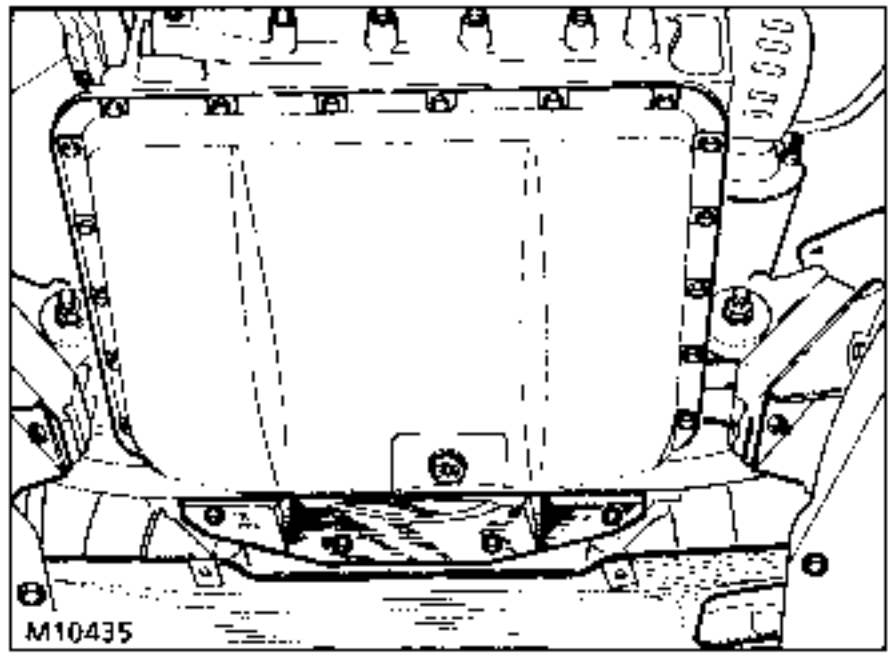
Special points concerning NG gearbox:
Disconnect the clutch slave cylinder feed union (1).



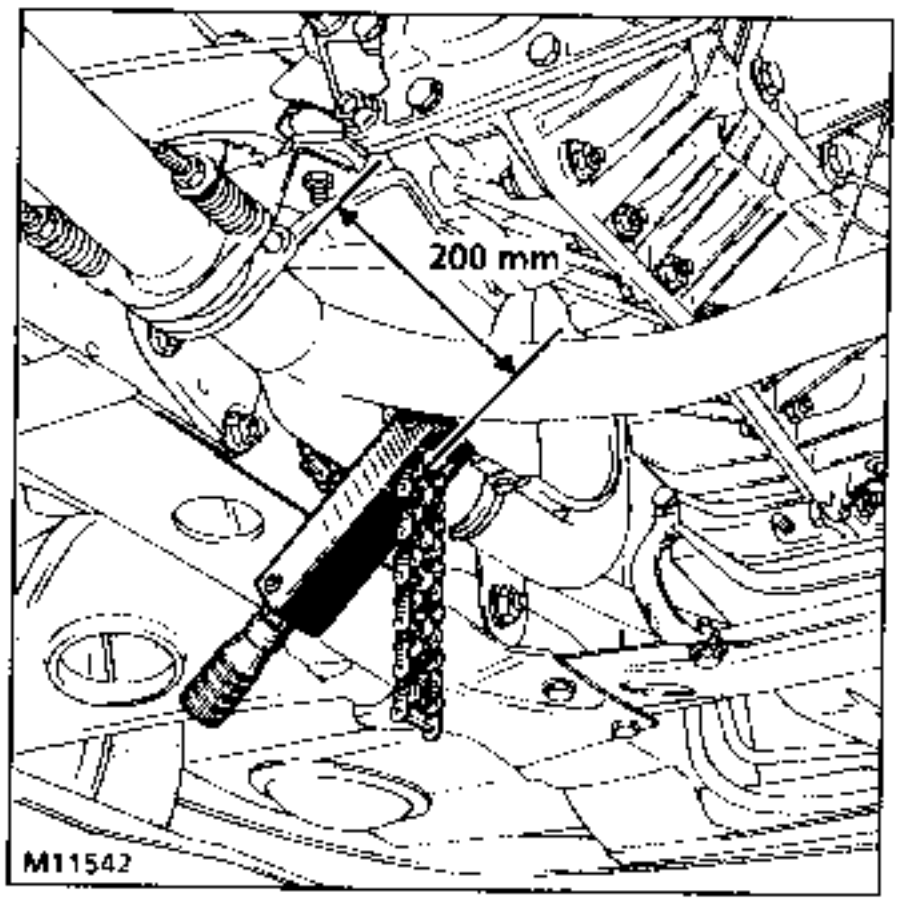
Remove:
- the three bolts securing the starter and push it back;
- Strut (V) fitted with its mounting;



- the flywheel protection panel.

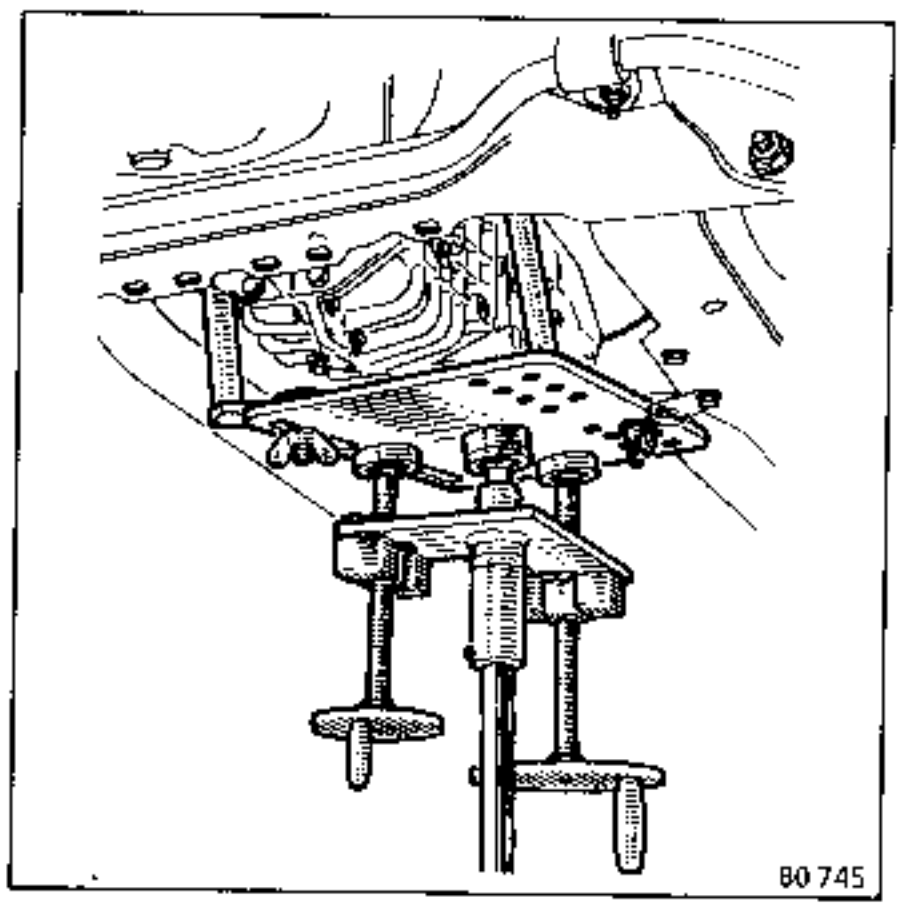


Cut the exhaust downpipe 200 mm away from the flange using tool Mot.1219.



Remove:

- the nuts from the manifolds and the flange;
- the downpipe in two halves.



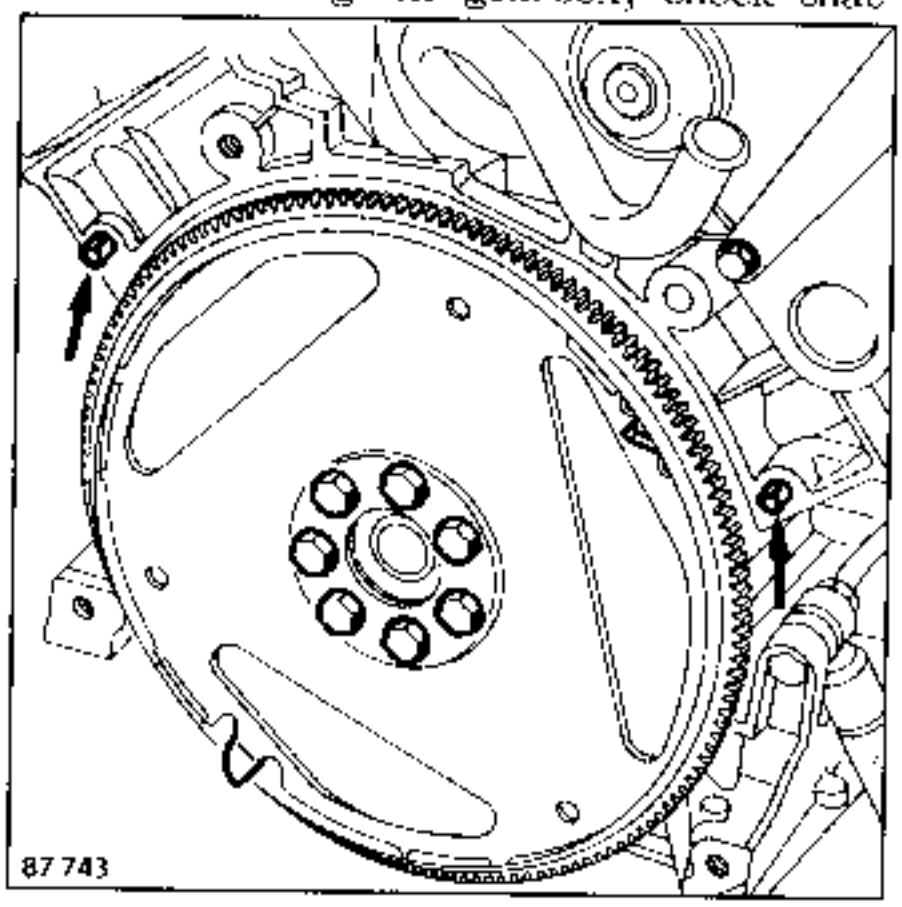
Place a unit support jack under the gearbox.

Remove:
- the engine gearbox mounting bolts;
- the engine mounting pads.

Pull the gearbox towards the rear of the vehicle taking care not to catch it on the clutch unit.

REFITTING

Special point:
Before refitting the gearbox, check that

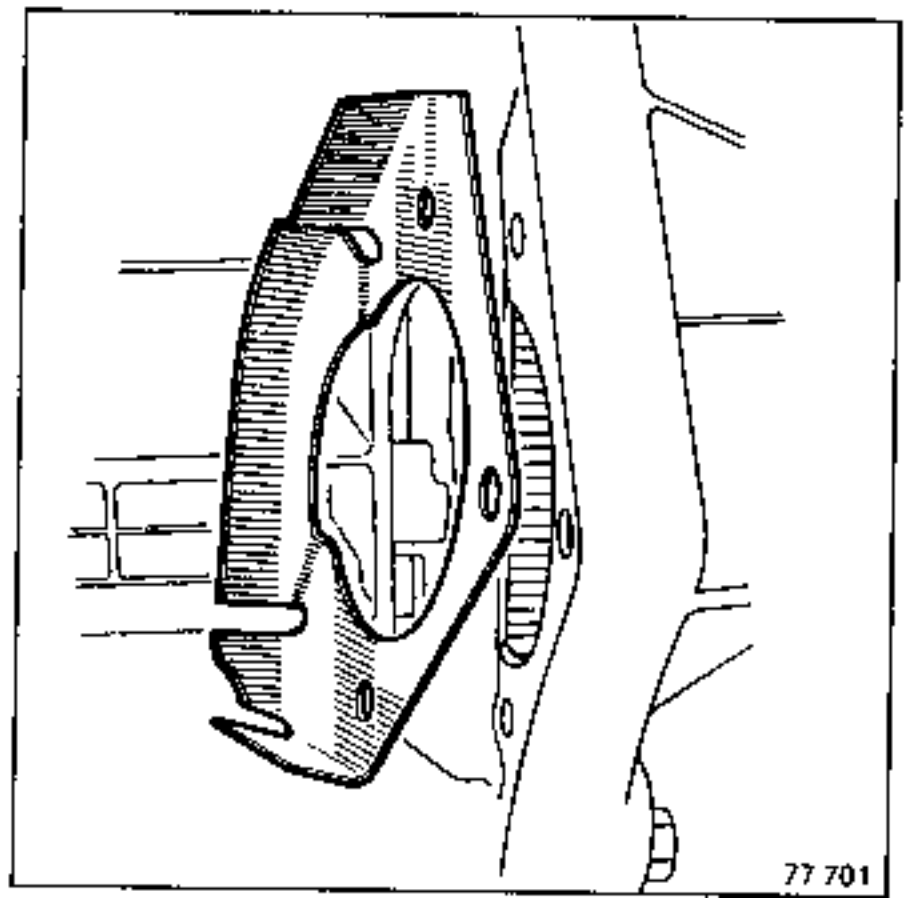


the locating pins are fitted on the engine.

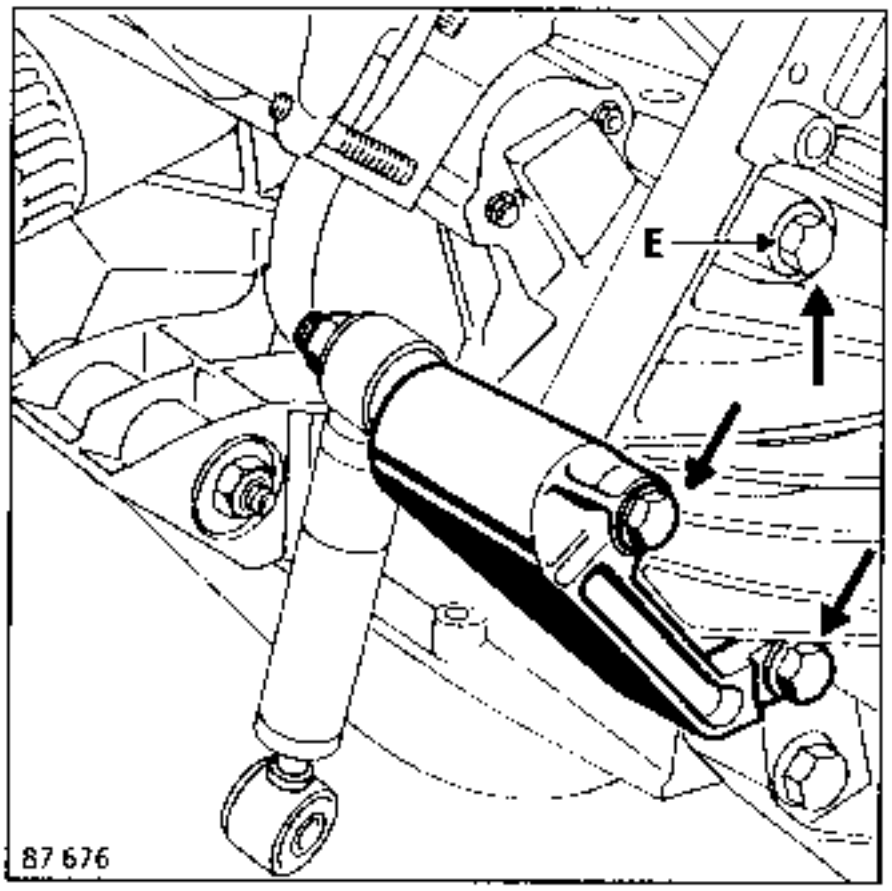
Engage the gearbox, taking care not to catch it on the clutch unit.

Assemble the engine and gearbox and fit the gearbox lefthand and righthand mountings in place.

Position the protection panel on the starter locating pin on the clutch casing.



Fit and tighten the three mounting bolts on the clutch casing (bolt E is shortest).



Reconnect :

- the gearbox controls;
- the speedometer cable;
- the reversing light feed wires;
- the clutch slave cylinder feed union.

Refit the driveshafts.

Fit two new spring pins using tool B.Vi.606 placing a drop of CAF 4/60 THIXO in the holes.

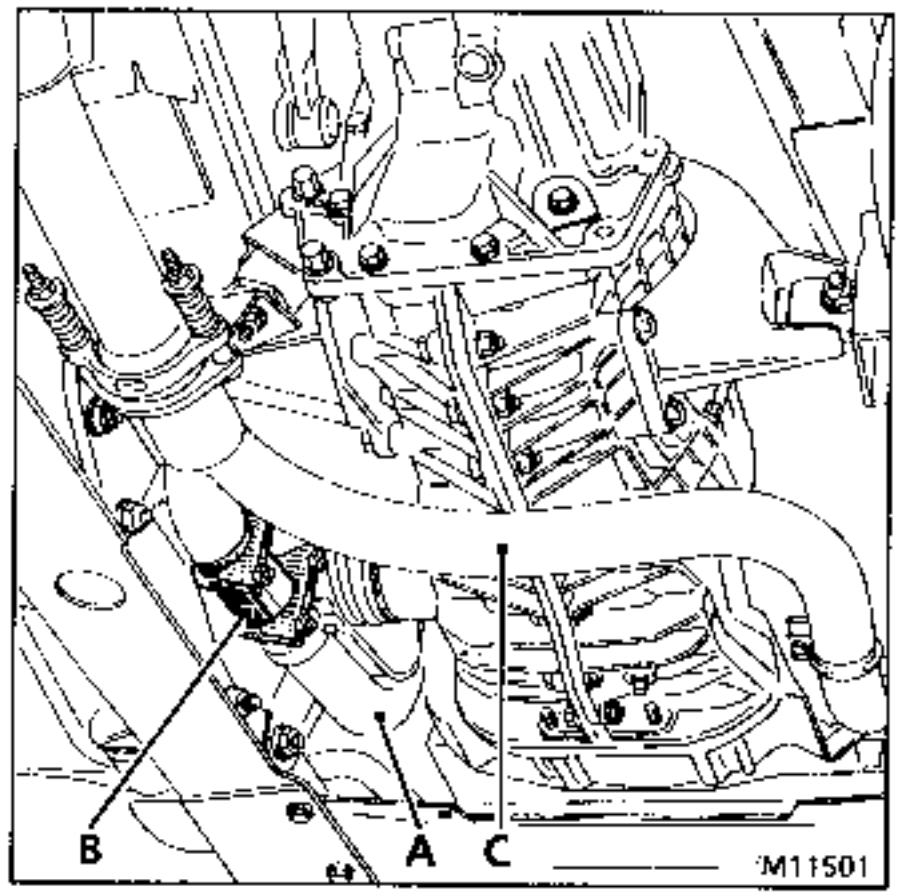
Refit the lefthand section of the divided exhaust downpipe on lefthand manifold (A).

Coat the pipes with exhaust paste at the point where the sleeves join.

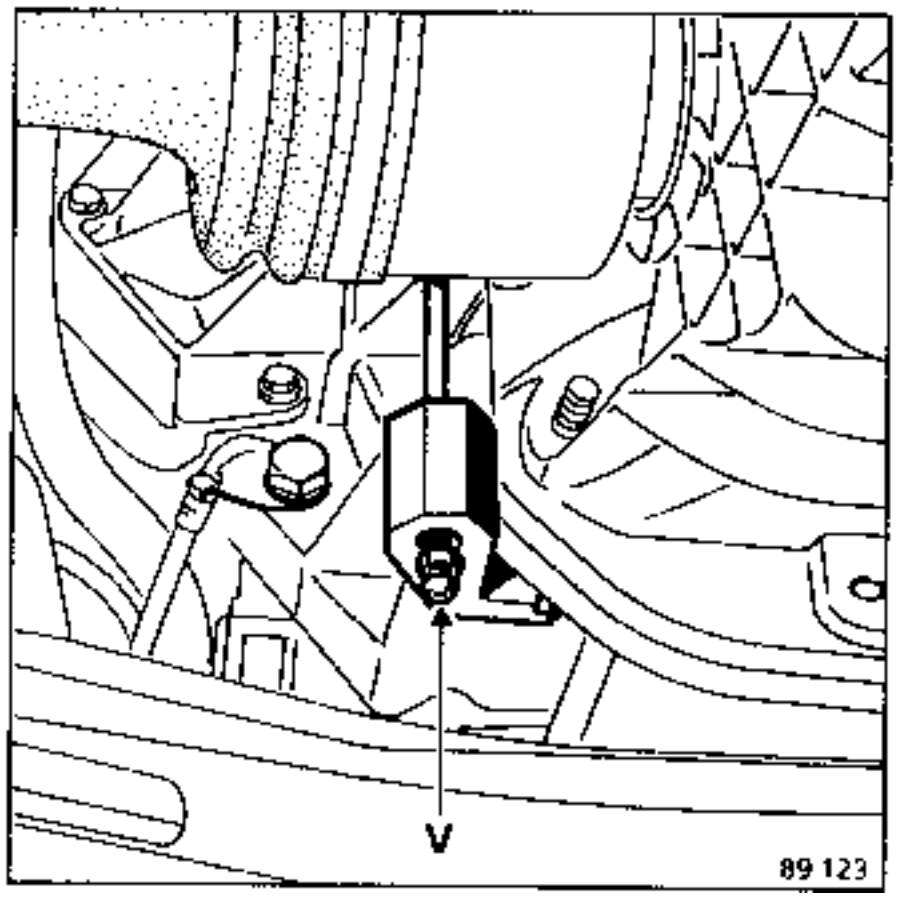
Fit sleeve (B) in place on the lefthand downpipe.

Refit the righthand section of downpipe (C) on the righthand manifold.

Secure the sleeve to the downpipes.



Bleed the clutch system via screw (V) mounted on the gearbox front lefthand base.

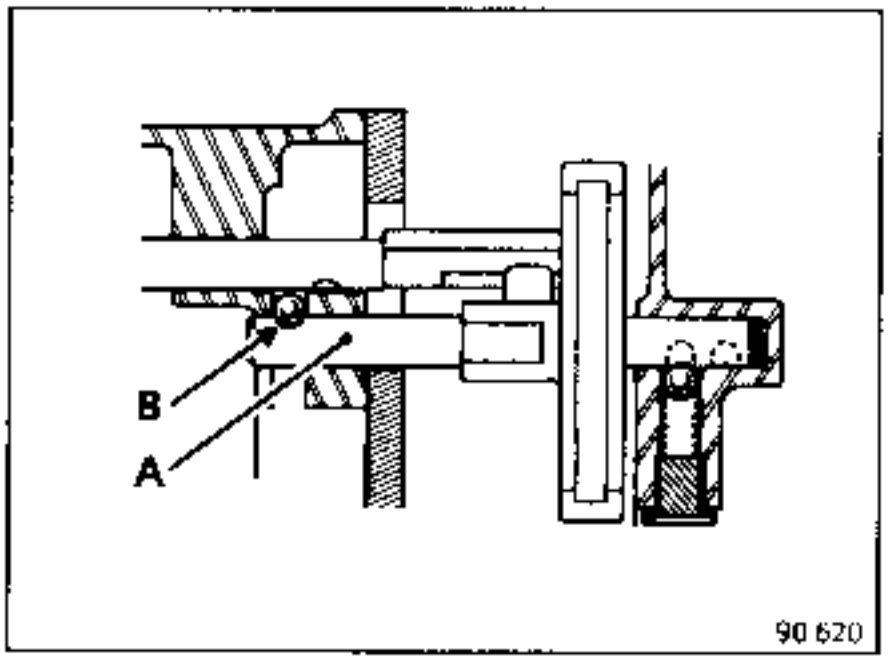


ESSENTIAL SPECIAL TOOLING	
B.Vi.204-01	Secondary shaft nut wrench

TIGHTENING TORQUES (in daNm)	
Primary shaft nut	13
Secondary shaft nut	15
Rear casing bolts	1,5

The 5th speed assembly cannot be replaced in situ since it is essential that the 5th speed fork shaft (A) is not removed as there is a risk of the locking ball (B) falling into the gearbox.

However, this section covers the removal of the 5th speed housing in situ for the occasions when work has to be performed on it or the speedometer drive gears have to be replaced.

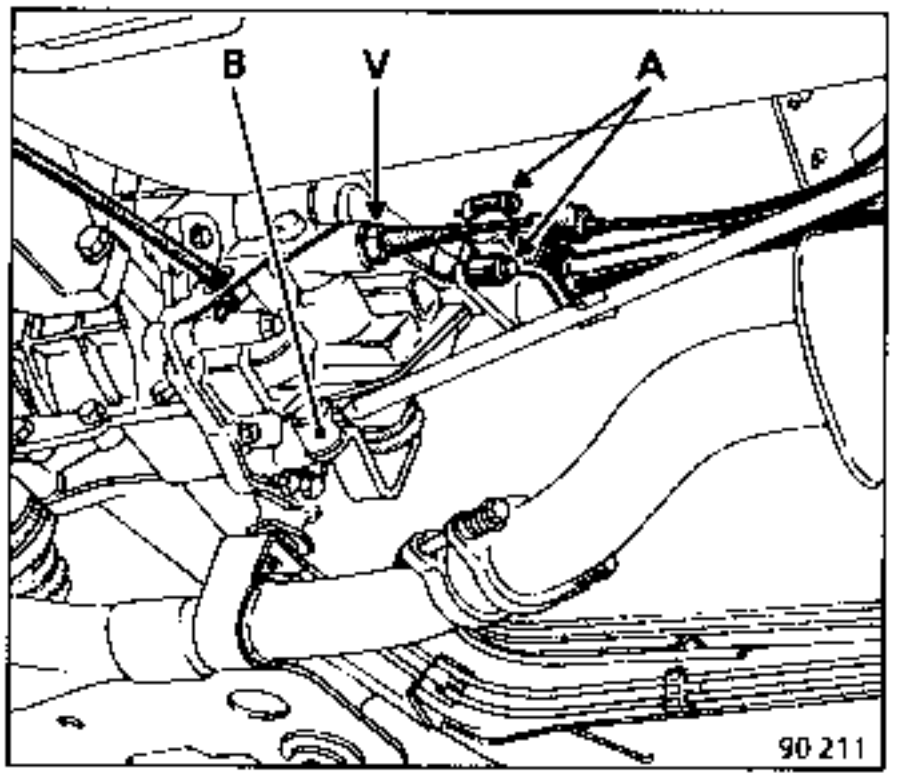


REMOVAL

Drain the gearbox.

Remove:
- selector controls:
  - at (A) the two mounting bolts;
  - at (B) uncouple the ball joint;
- reverse gear locking device (V);
- the 5th speed detent ball.

Disconnect the speedometer cable after removing the spring pin.



Select 4th gear so that the 5th speed locking ball does not fall into the gearbox.

Remove the 5th speed housing.

Replacing the secondary shaft nut:
- select neutral;
- engage 1st and 5th gears;
- loosen and unlock the secondary shaft nut using wrench B.Vi. 204-01 and a torque wrench.

REFITTING

Proceed in the reverse order to removal.

Put three drops of loctite FRENBLOC on the threads of the new nut and torque tighten it to 15 daNm.

Return the gears to neutral, engage 5th then fit the casing in place (after coating the seal with PERFECT SEAL).

Torque tighten the bolts to 1.5 daNm.

Check that all the gears can be selected.

Coat the threads of the 5th speed locking ball plug and the reverse gear positive locking device with CAF 4/60 THIXO.

Refill the gearbox with 2.2 litres of oil.

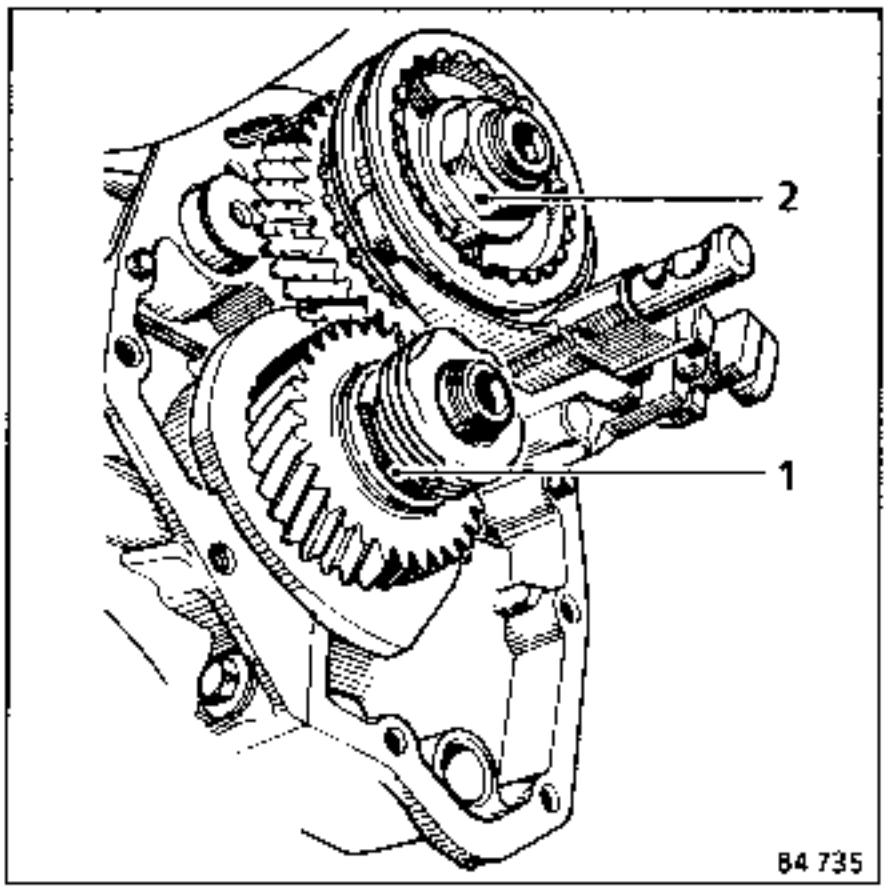
ESSENTIAL SPECIAL TOOLING	
B.Vi.28-01	Extractor
B.Vi.31-01	Set of 5 mm Ø drifts
B.Vi.204-01	Secondary shaft nut wrench
B.Vi.1170	5th speed hub extractor
B.Vi.1007	Claws for B.Vi.28-01

TIGHTENING TORQUES (in daNm)	
Primary shaft nuts	13
Secondary shaft nuts	15
Rear casing bolts	1.5

REMOVAL

This operation is performed after the gearbox has been removed and the 5th speed housing has been dismantled (see previous page).

Make marks on the hub and sliding gear.

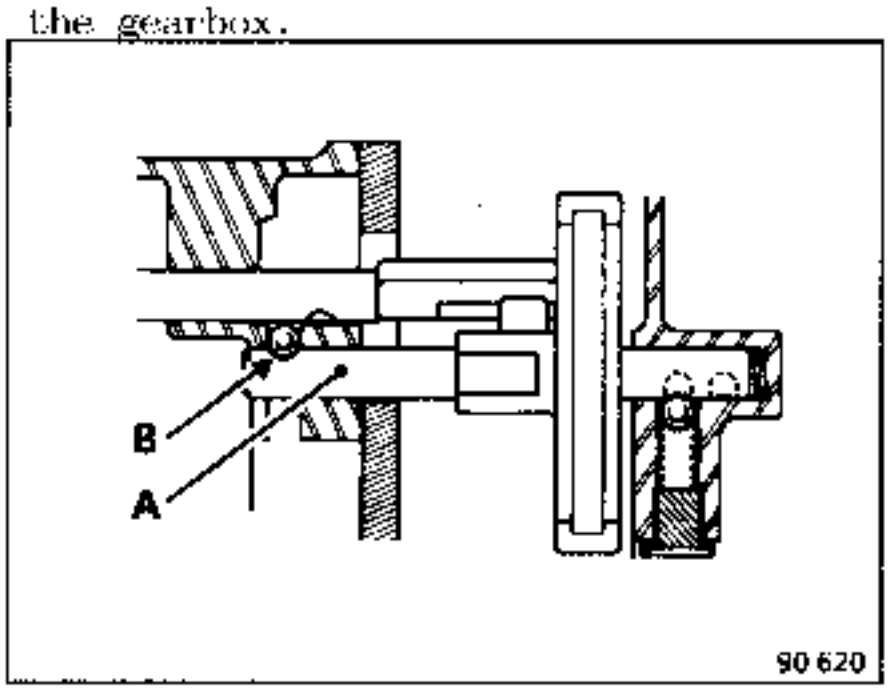


Select 1st and 5th gears.

Loosen and remove primary shaft nut (2).

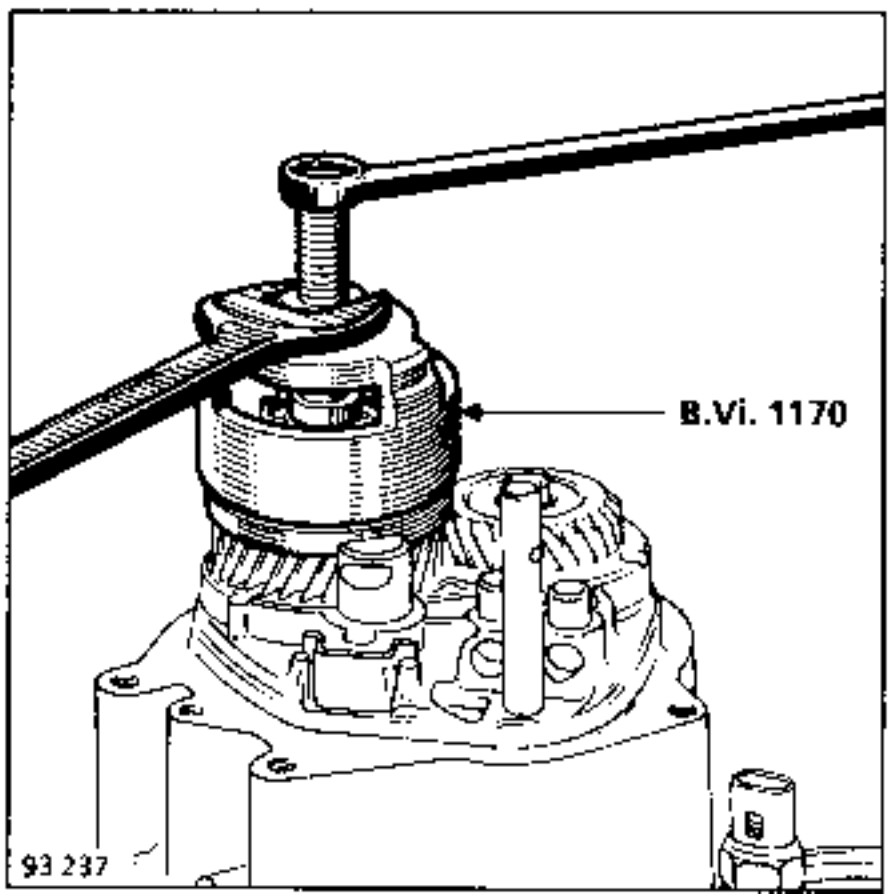
Loosen and remove secondary shaft nut (1) using wrench B.Vi.204-01 and a torque wrench.

When removing the 5th speed shaft and fork without separating the half casings, the gearbox must be positioned at the reversing light switch end to prevent the locking ball falling into the gearbox.



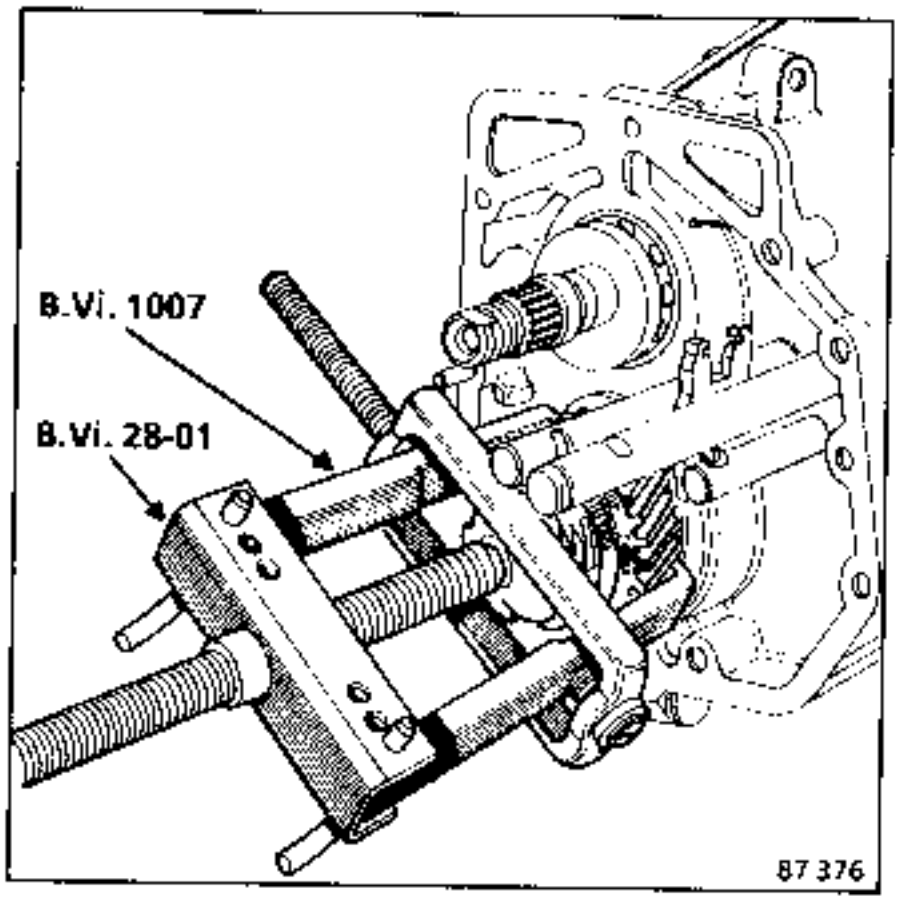
Return the gears to neutral.

Remove the 5th speed synchro assembly (hub-sliding gear and shaft-fork) using tool B.Vi.1170.



Remove the 5th speed idler gear, bearing and bush.

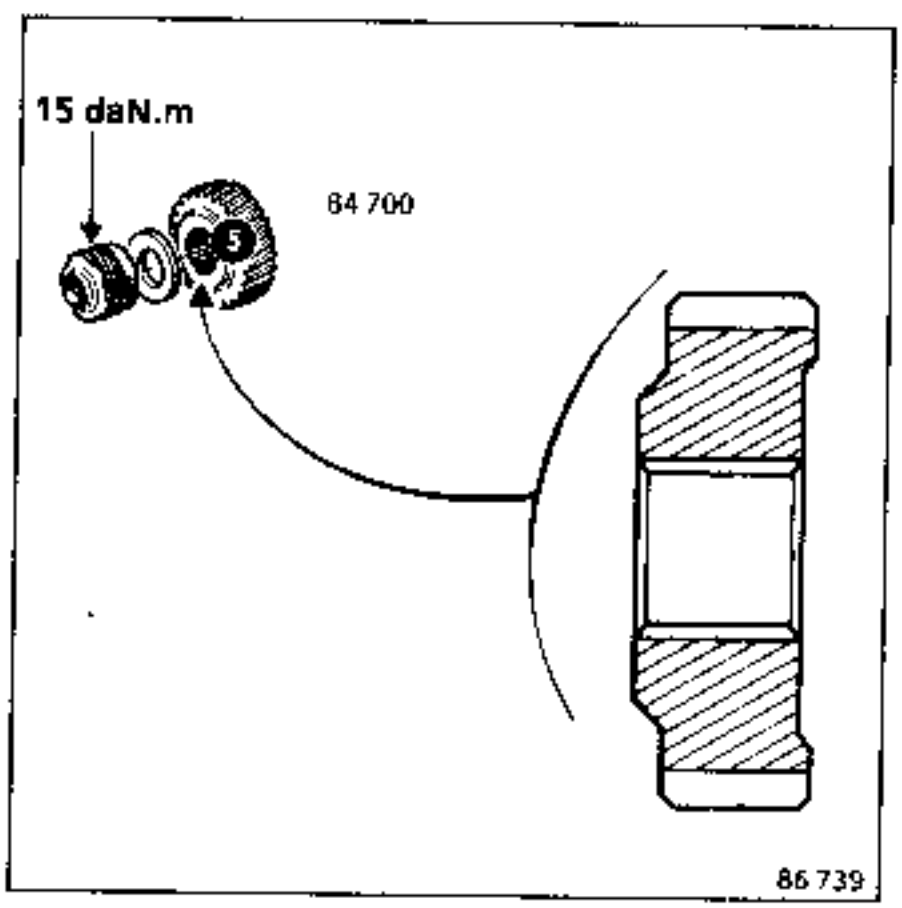
Remove the 5th speed fixed gear using tool B.Vi.28-01 fitted with claws B.Vi.1007.



REFITTING

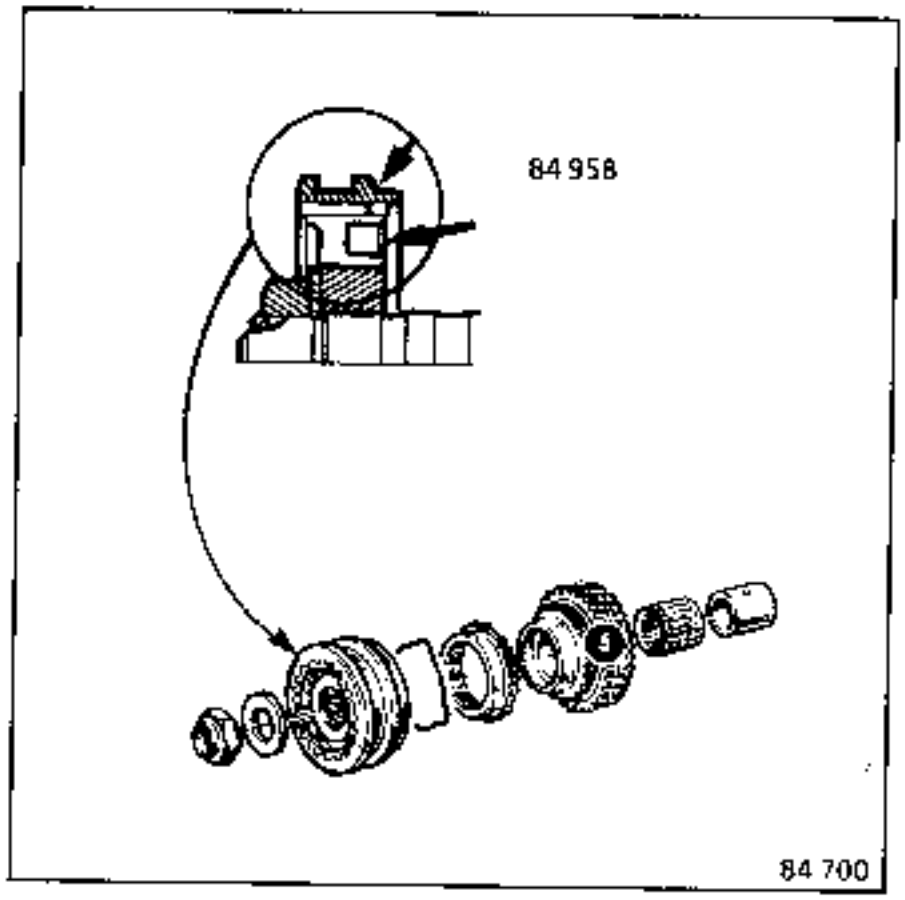
Proceed in the reverse order to removal.

On the secondary shaft:
ensure that the fixed gear is fitted the correct way round and bond it with Loctite FRENBLOC.



On the primary shaft:

Bond the hub with Loctite FRENBLOC and ensure that the assembly is fitted the correct way round.



Place the bosses on the synchro ring in the notches in the hub.

Refit the 5th speed synchro assembly, hub sliding gear and fork shaft.

Select 1st and 5th gears.

Put three drops of Loctite FRENBLOC on the threads of the new nut, torque tighten and lock them:

- primary shaft: 13 daNm
- secondary shaft: 15daNm.

Refit the 5th gear casing.

Check that all gears can be selected.

ESSENTIAL SPECIAL TOOLING	
B.Vi.31-01	Set of drifts
B.Vi.10-03	5th speed hub extractor

TIGHTENING TORQUES (in daNm)	
Primary shaft nut	13
Secondary shaft nut	20
Output shaft nut	12
Rear casing bolts	1,6-2

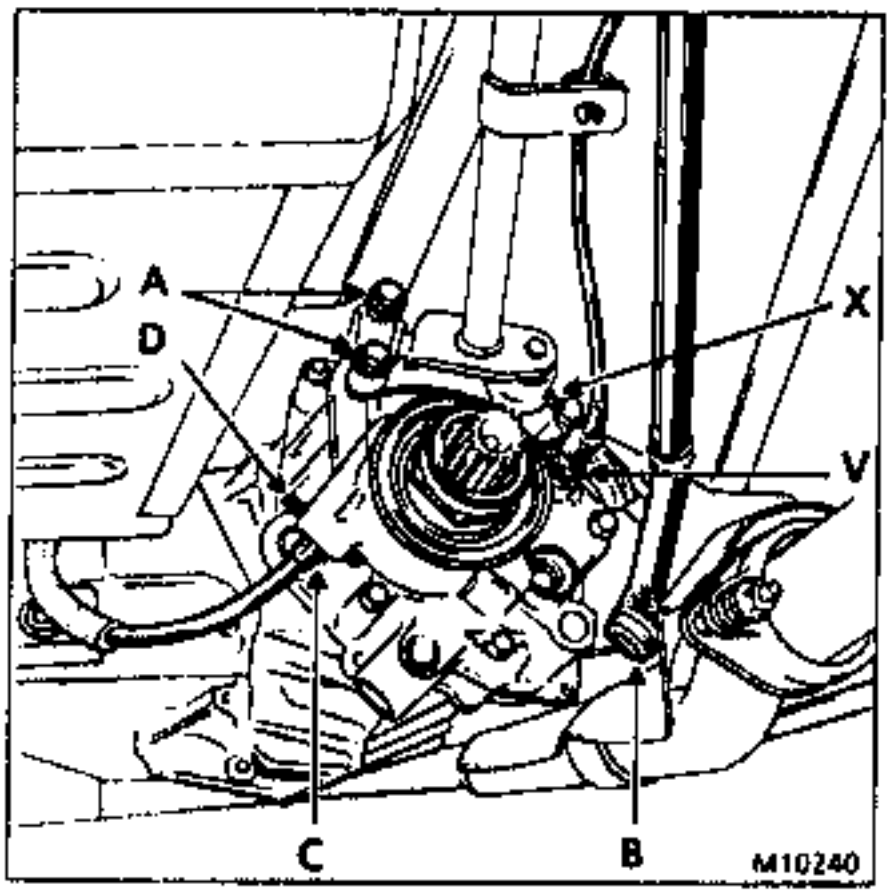
REMOVAL

Drain the gearbox.

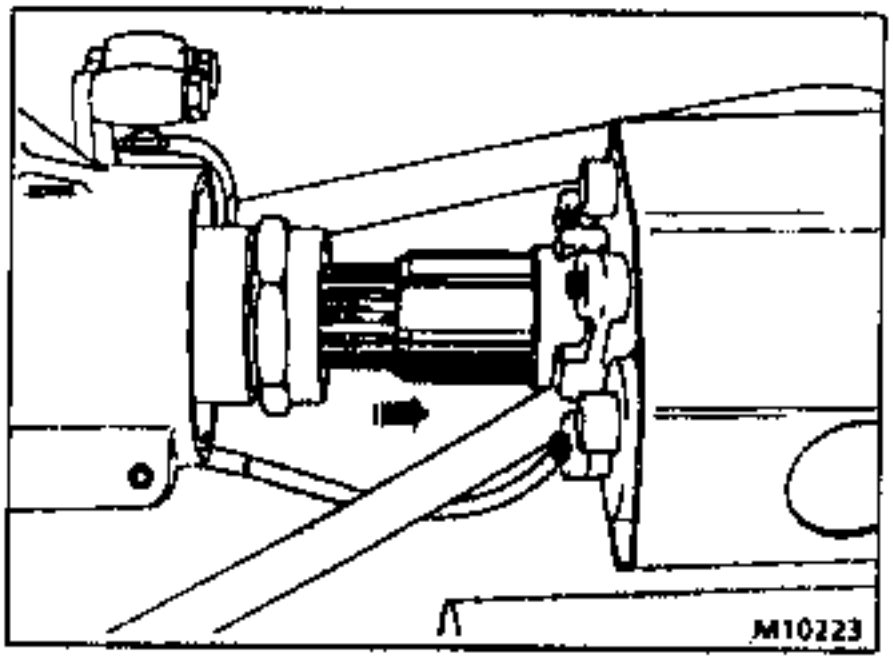
Remove:

- the selector controls:
  - at (A) the two mounting bolts;
  - at (B) uncouple the ball joint;
- reverse gear locking device (B);
- 5th speed detent ball (X).

Disconnect the speedometer cable (C) after removing spring pin (D).

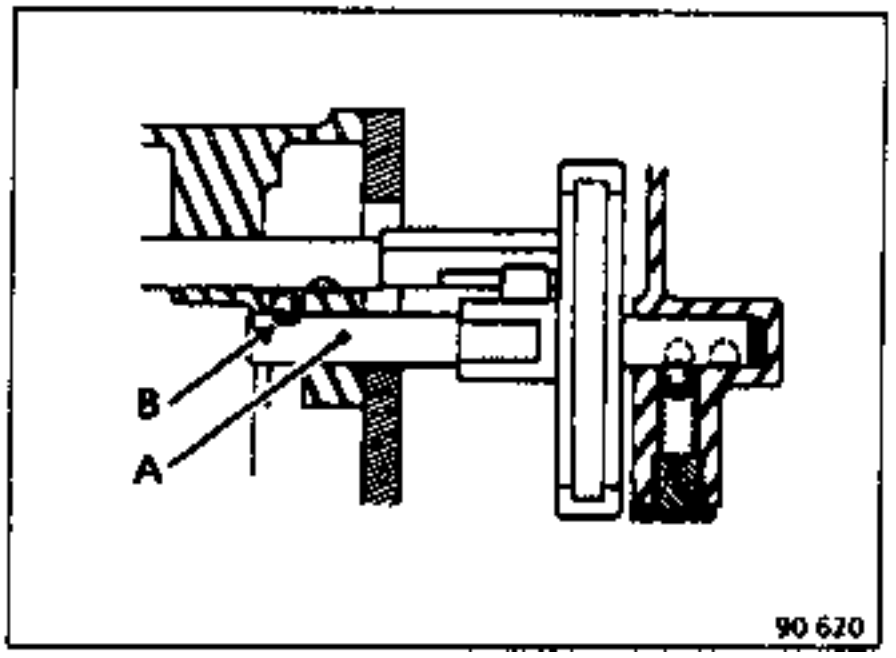


Uncouple the prop shaft.



Select 3rd gear so as to lock the 5th speed fork.

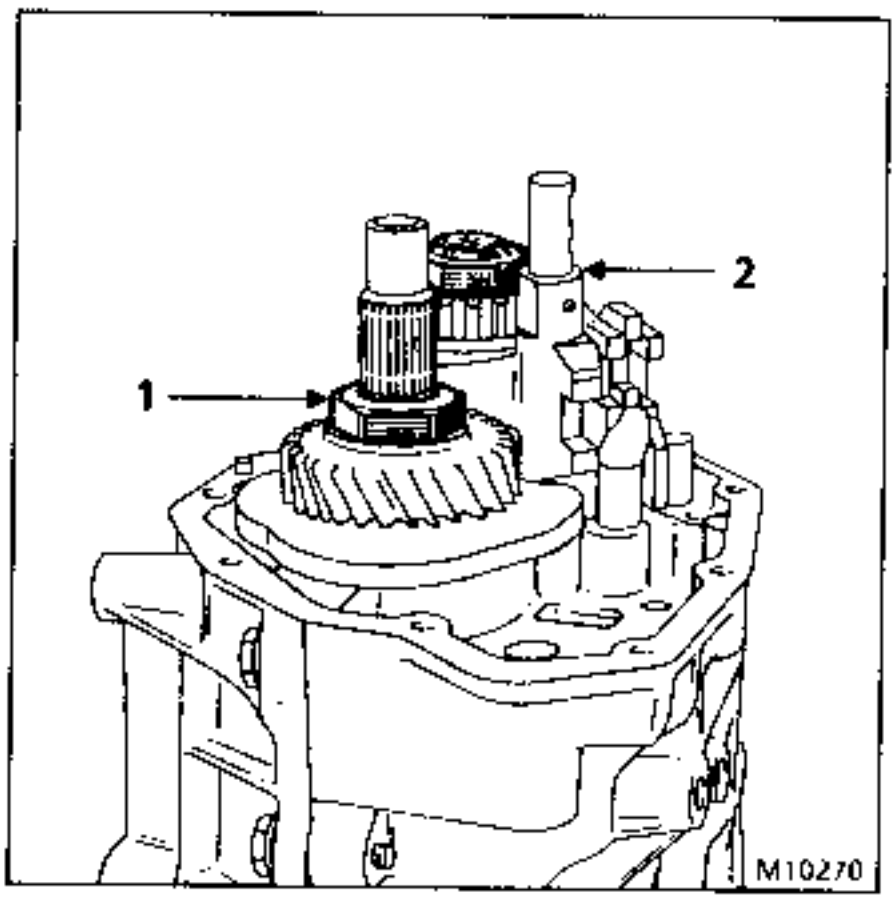
NOTE: it is essential not to remove 5th speed fork shaft (A) as there is a risk of detent ball (B) falling in to the gearbox.



Remove the rear casing bolts.

Remove the casing.

Place the gearbox in neutral then select 5th and 2nd gears.



Slacken:

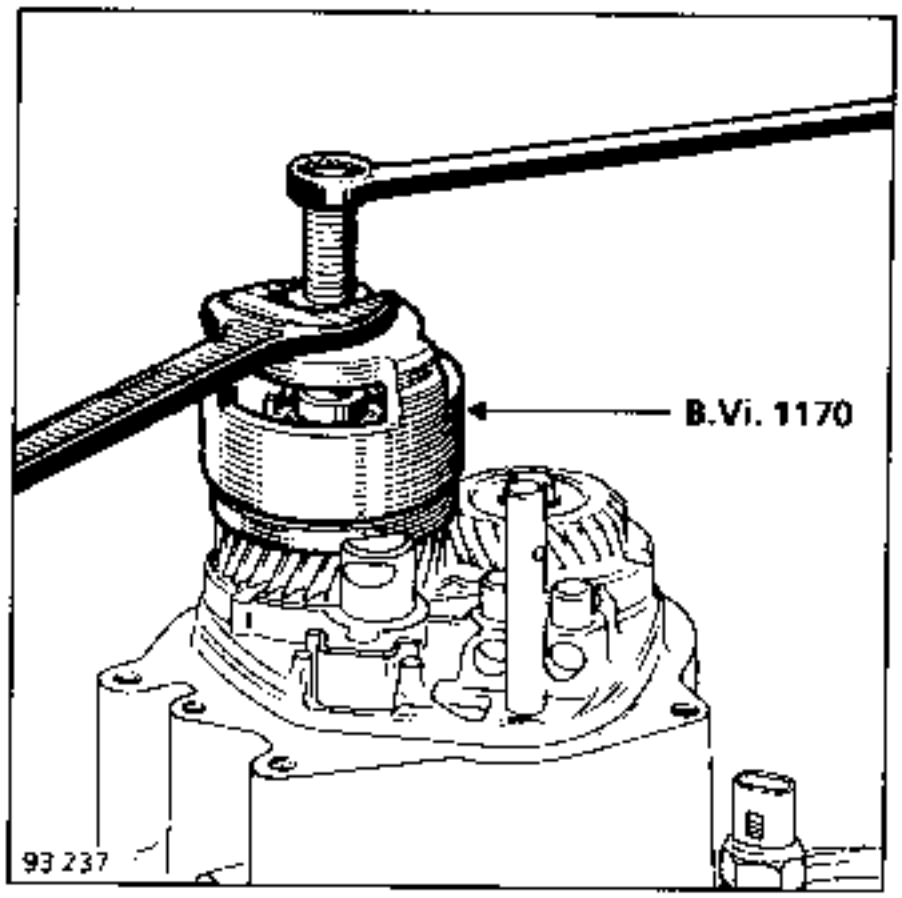
- nut (1) using a 36 mm long socket;
- primary shaft nut (2).

Return the gearbox to neutral then select 3rd gear again.

Remove the roll pins from the 5th speed fork using tool B.Vi.31-01.

Remove the 5th speed sliding gear-fork assembly.

Take out the 5th speed hub using tool B.Vi.1170.



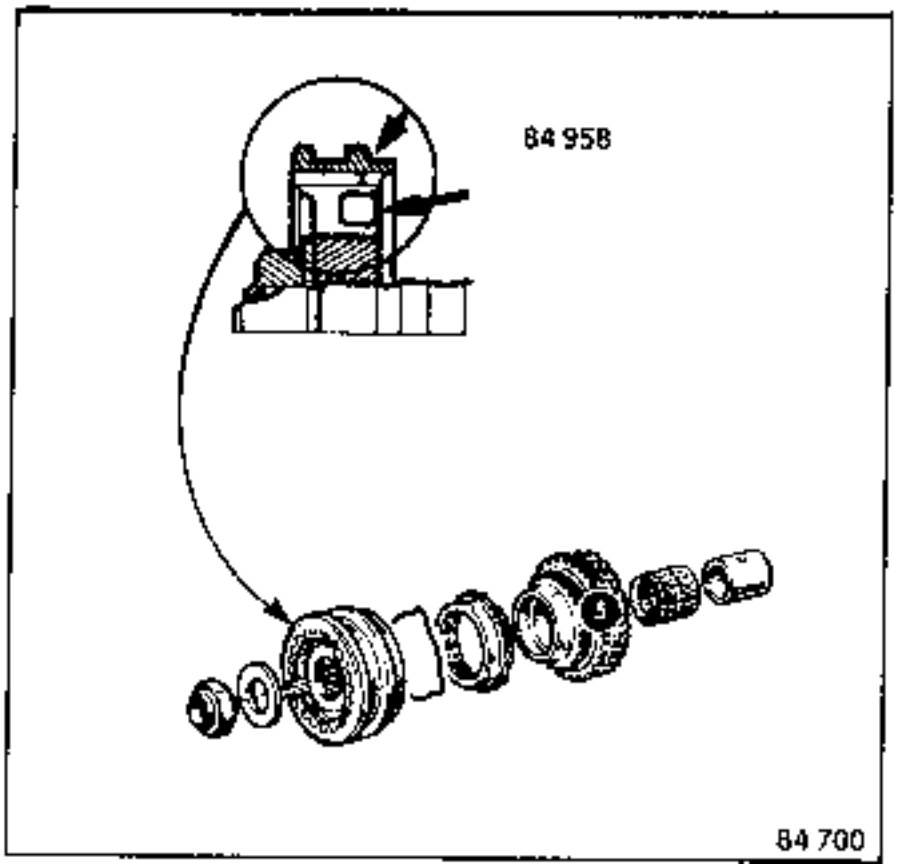
Fit the extractor jaws under the spacer plate and take out the 5th speed fixed gear and its plate.

REFITTING

Special points:

On the secondary shaft:
Ensure that the fixed gear is assembled in the correct direction and bond it with Loctite FRENBLOC.

On the primary shaft:
Bond the hub with Loctite FRENBLOC and ensure that the assembly is fitted the correct way round.

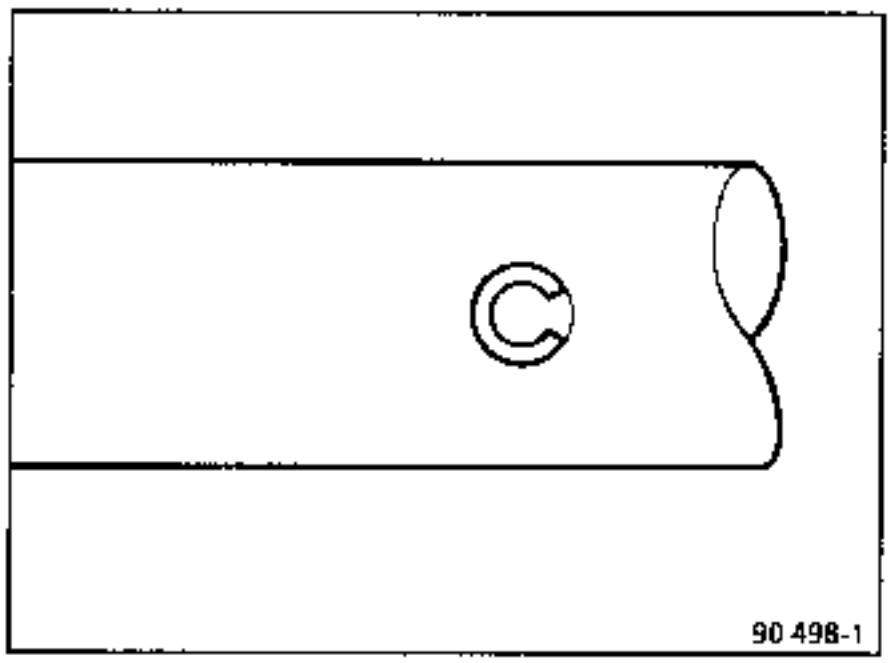


Fit the bosses on the synchro ring in the notches on the hub.

Refit:
- the 5th speed synchro, sliding gear-hub and fork assembly;
- the washers.

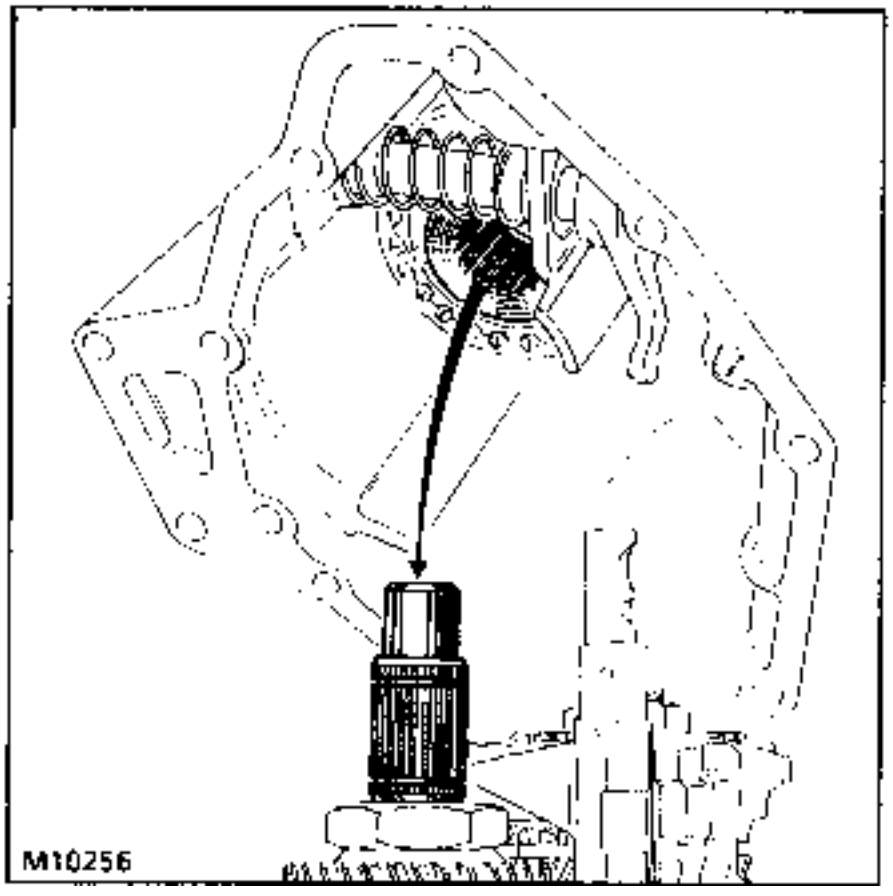
Place three drops of Loctite FRENBLOC on the threads of the new nuts, torque tighten them and lock them.

Fit the roll pins in the fork (using tool B.Vi.31-01), with the slot on the roll pins parallel to the shaft.



Fit the dry cover seal.

Select 3rd gear and fit the casing, positioning the selector finger in the 3rd speed fork shaft dog.



Fit the rear casing.

Torque tighten the bolts.

Refit the 5th speed detent ball, with the plug threads coated with CAF 4/60 THIXO paste.

Disengage 3rd gear.

Check that all the gears can be selected.

Reconnect all the controls.

Refit the prop shaft.

Top-up the gearbox oil: 2.4 litres.

ESSENTIAL SPECIAL TOOLING	
B.Vi.28-01	Extractor (UN gearbox)
Rou.15-01	Shaft protecting end piece
B.Vi.1003	5th speed hub extractor
B.Vi.1007	Jaws for B.Vi.28-01

TIGHTENING TORQUES (in daNm)	
Primary Shaft Nut	13,5
Secondary Shaft Nut	20
Rear Casing Bolts	2,5

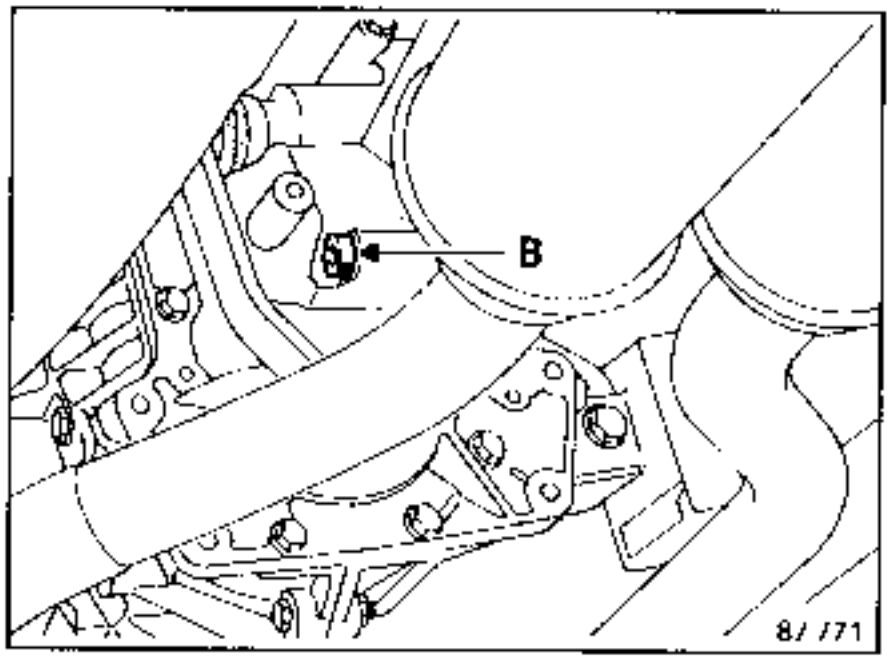
REMOVAL

Drain the gearbox.

Place the gearbox in neutral.

Remove:

- the gear control;
- the reverse gear positive lock;
- 5th speed detent ball (B).



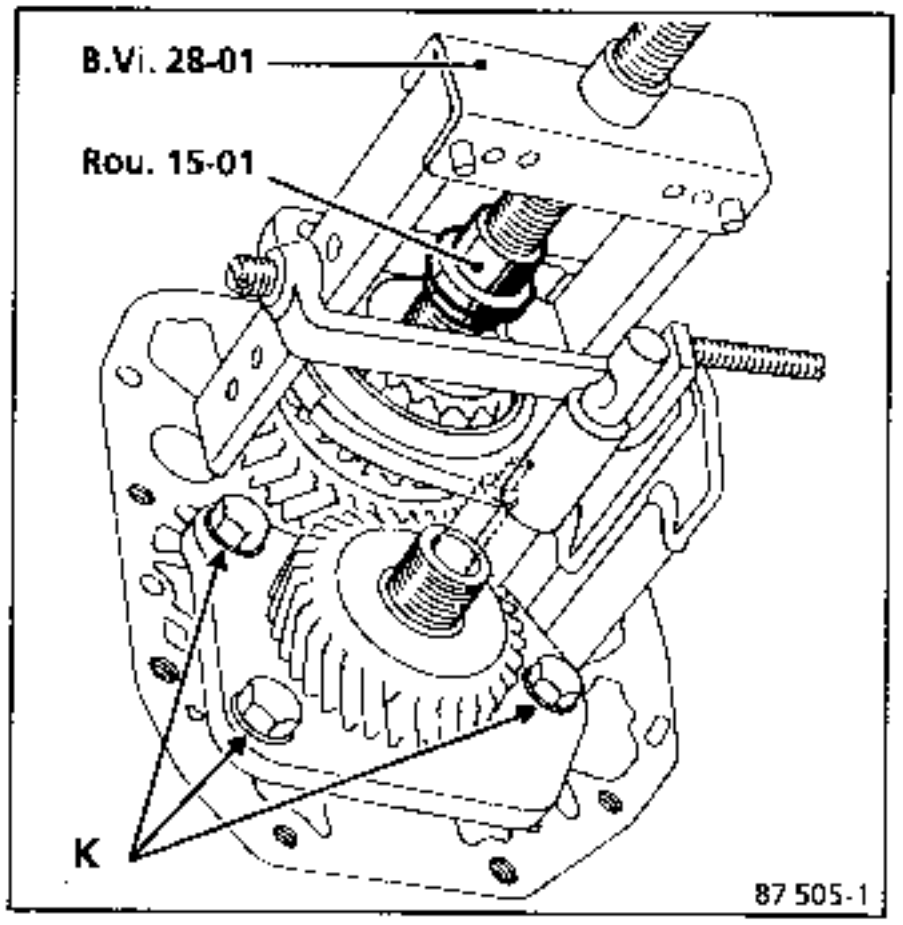
Remove the rear casing.

Push back the selector lever shaft.

Return the gearbox to neutral.

Fit tool B.Vi.28-01, using shaft protector Rou.15-01, and take out the 5th speed assembly: hub-sliding gear, fork, synchro ring, idler gear, needle bearing, bush and washer.

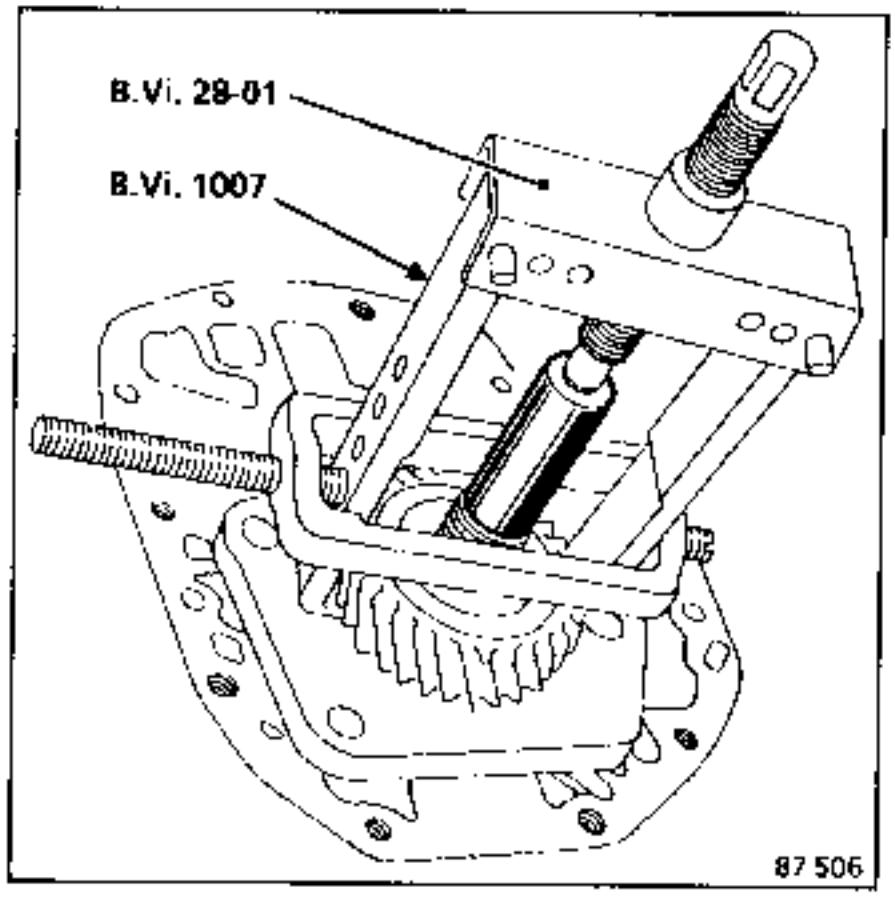
UN GEARBOX



Remove bolts (K).

Remove the 5th speed fixed gear using tool B.Vi.28-01 fitted with jaws B.Vi.1007.

UN Gearbox



REFITTING

Proceed in the reverse order to removal.

Torque tighten the spacer plate bolts to 5 daNm.

Place three drops of Loctite SCELBLOC on the shaft splines and three drops of Loctite FRENBLOC on the threads of the new nuts.

Select two gears.

Torque tighten and lock the nuts:
- primary shaft: 13.5 daNm
- secondary shaft: 20 daNm

Check that all the gears can be selected.

Return to neutral.

Fit in place the rear casing (after coating the seal with PERFECT SEAL).

Torque tighten theholts to 2.5 daNm (UX gearbox).

Coat the threads of the 5th speed detent ball and reverse gear positive lock with CAF 4/60 THIXO paste.

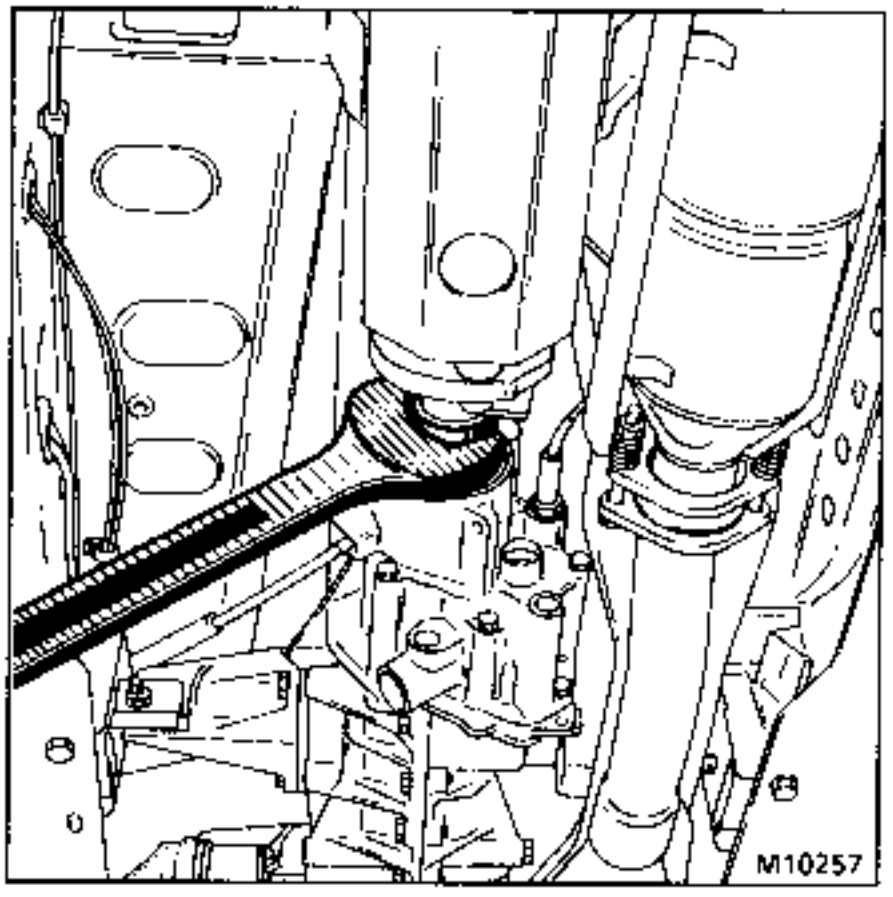
Top up the oil: 3 litres.

ESSENTIAL SPECIAL TOOLING	
B.Vi.31-01	Set of pin drifts
B.Vi.747	Fork for dismantling and reassembling selector spring
Mot.BV.658	Seal fitting tool
	50 mm open-ended spanner

TIGHTENING TORQUES (in daNm)	
Prop shaft bolts	6
Nut	12
Casing bolts	1,6-2,8

REMOVAL

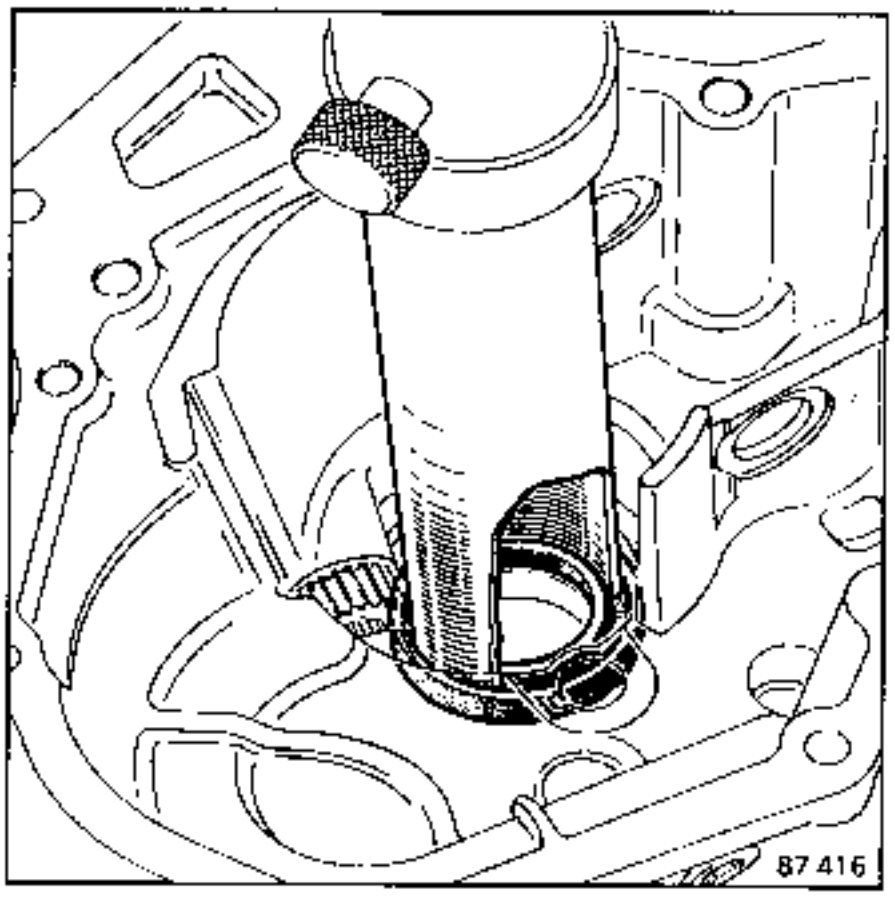
Precaution:
Before removing the prop shaft, slacken the gearbox nut (using a 50 mm open-ended spanner).



Remove:

- the prop shaft;
- the 5th speed housing;
- the output shaft on the press;
- the bearing circlip.

Take out the bearing and the seal on the press.



(See Illustration on page 21-4) :

Remove the roll pins from the ball joint cover mounting lever sleeve (8) and remove the sleeve.

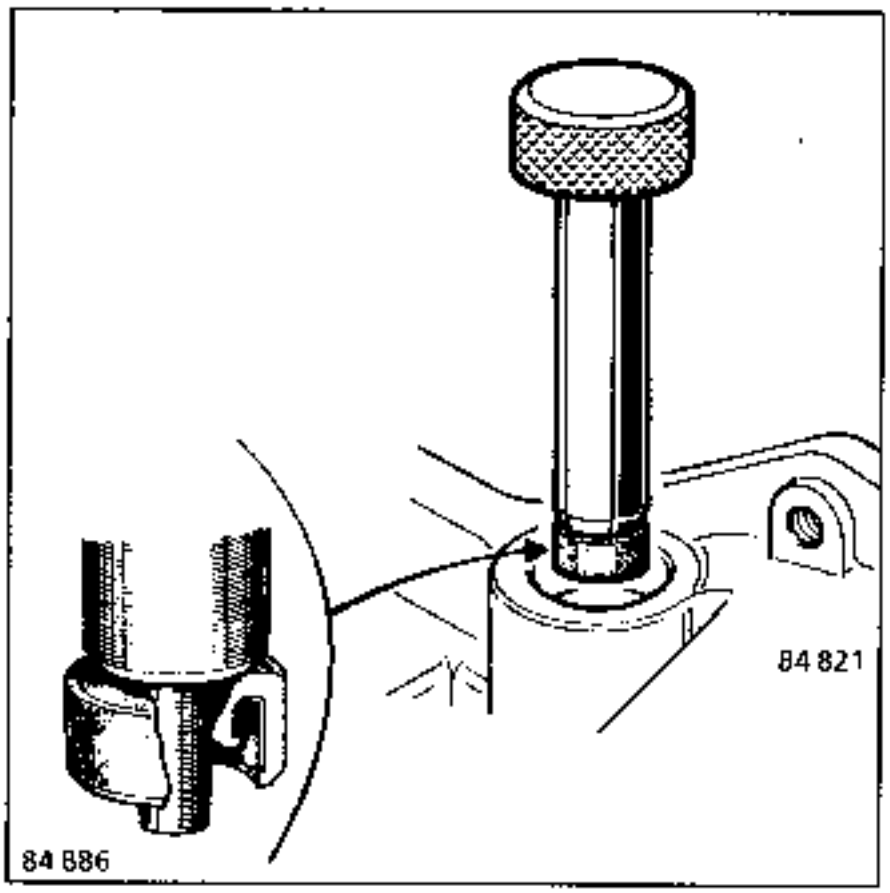
Take out selector lever (6) fitted with O ring seals (7).

Take out the speedo drive shaft. It must be replaced whenever it is dismantled.

REFITTING

Special Point:
Using tool Mot.658, refit greased O ring seal (2).

The speedo shaft seal is replaced using tool B.Vi.905-02.

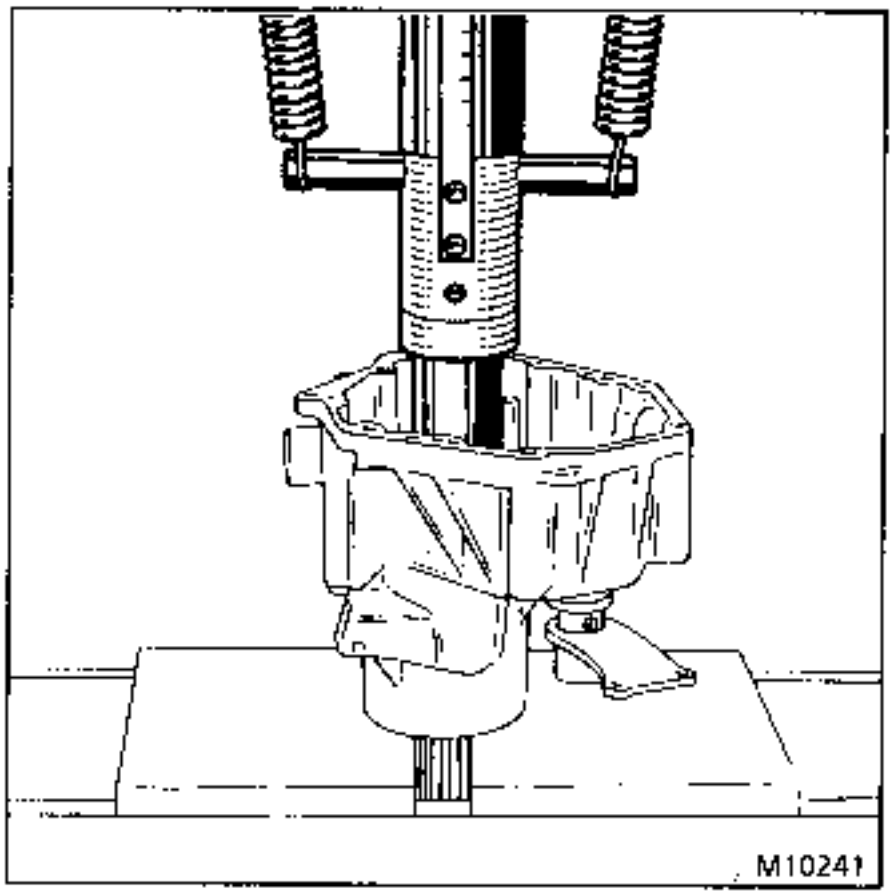


Ensure that the pinion is correctly clipped in place.

Fit the bearing on the press, taking the weight on the outer bearing track ring.

Fit in place circlip (4).

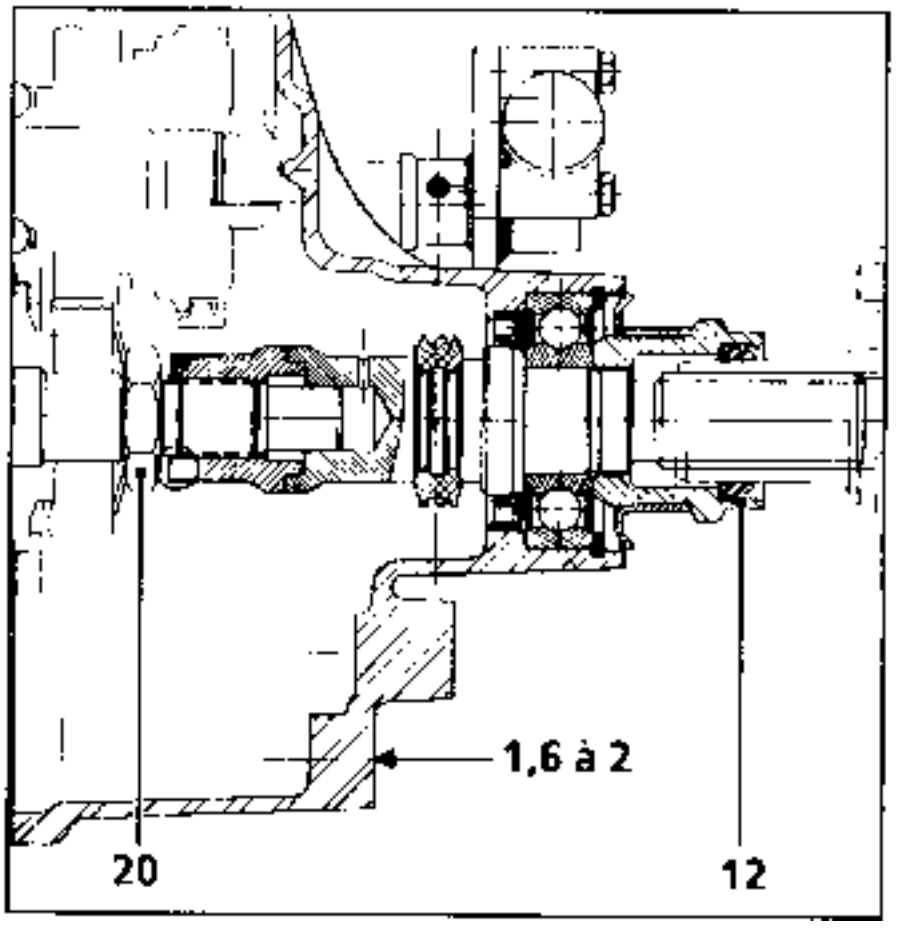
On the press, fit the shaft taking the weight under the inner bearing track ring.



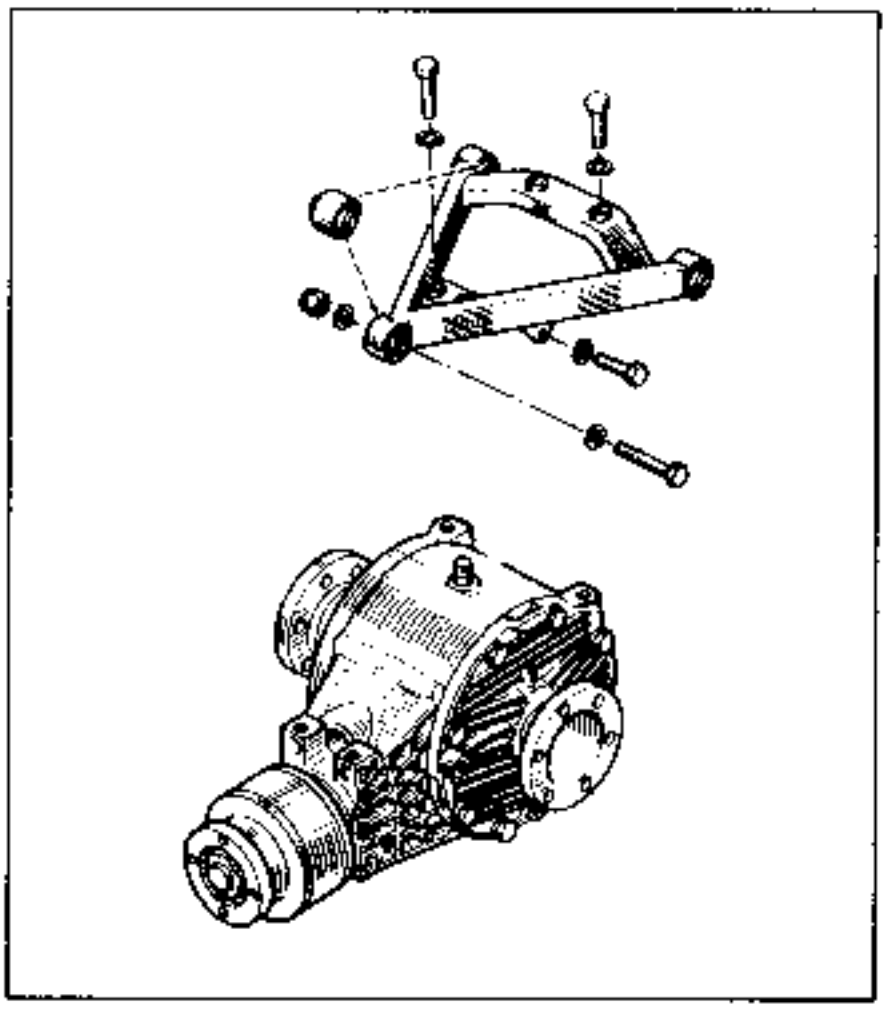
Check that the speedo drive rotates.

Ensure that the roll pins are fitted in the correct direction.

Torque tighten the output shaft nut.

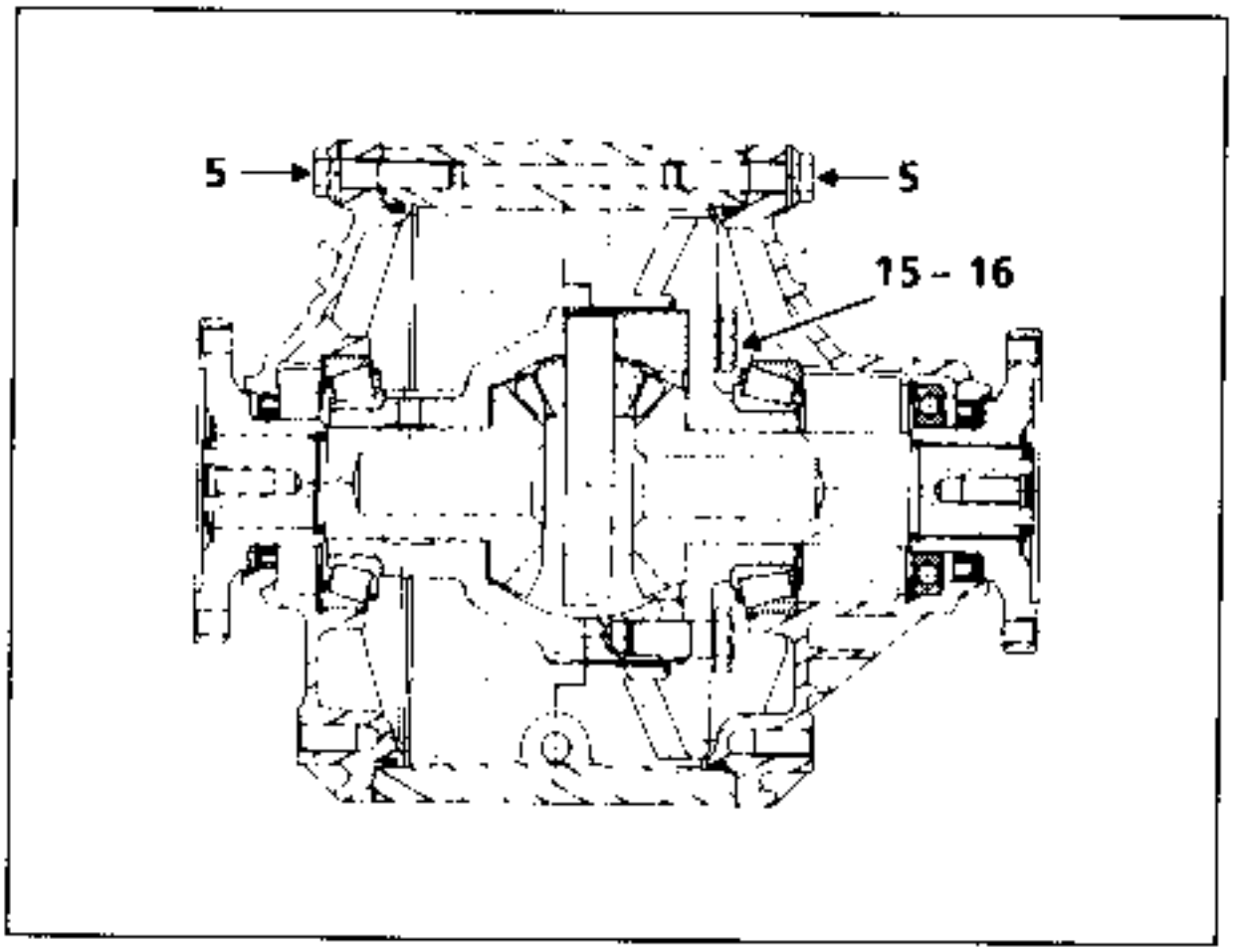


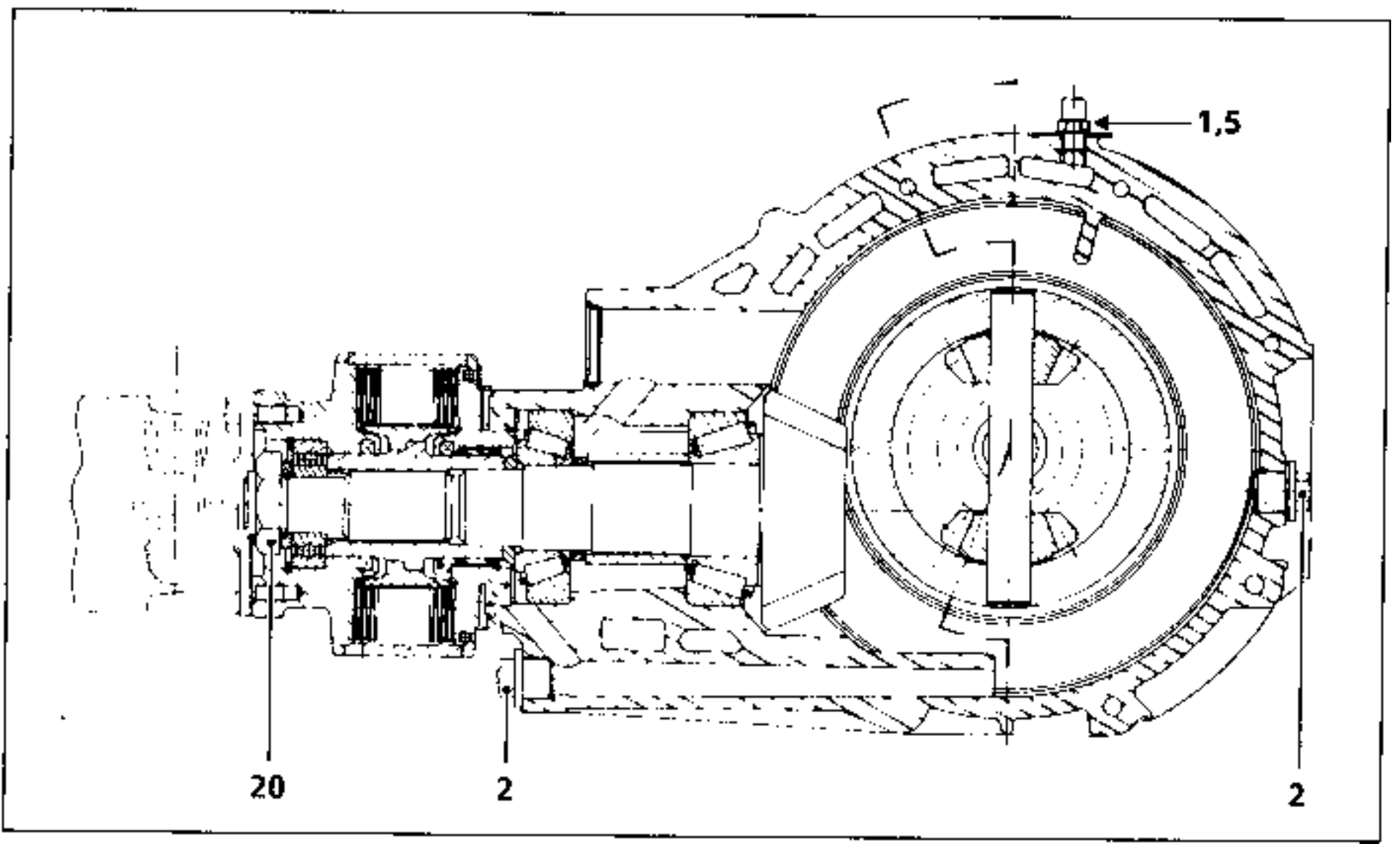
The axle is suspended by a metal cradle secured on the chassis by three flexible bearings.



Identification

TYPE	SUFFIX	FINAL DRIVE
OT2	011	9/34-0.265


5
5
15 - 16

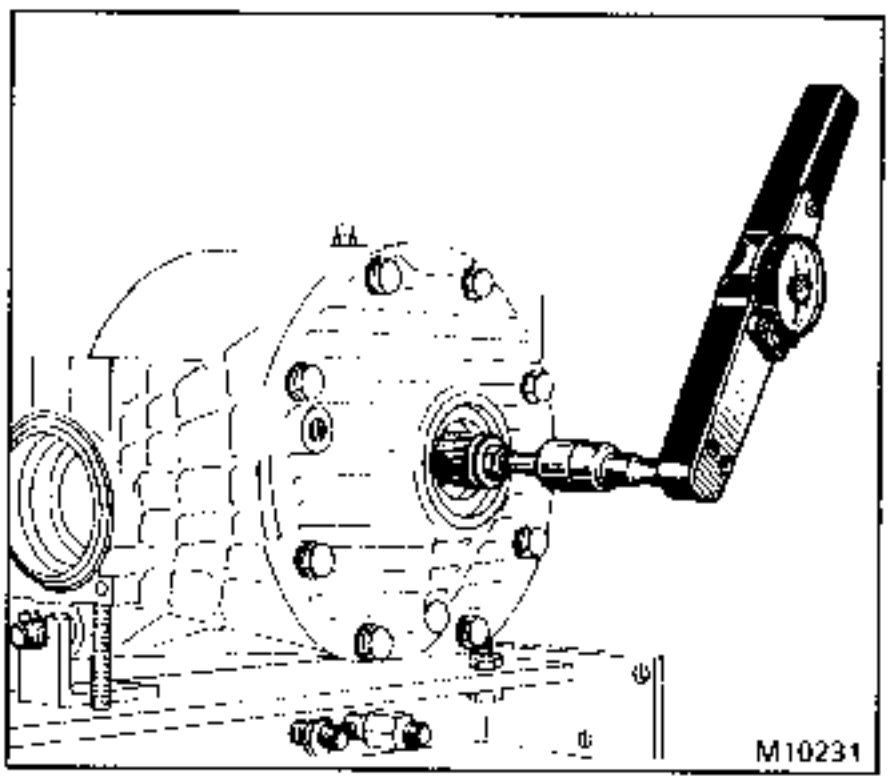

1,5
20
2
2

TRANSELF TRX 80W Oil: 1.2 litres

Consumables

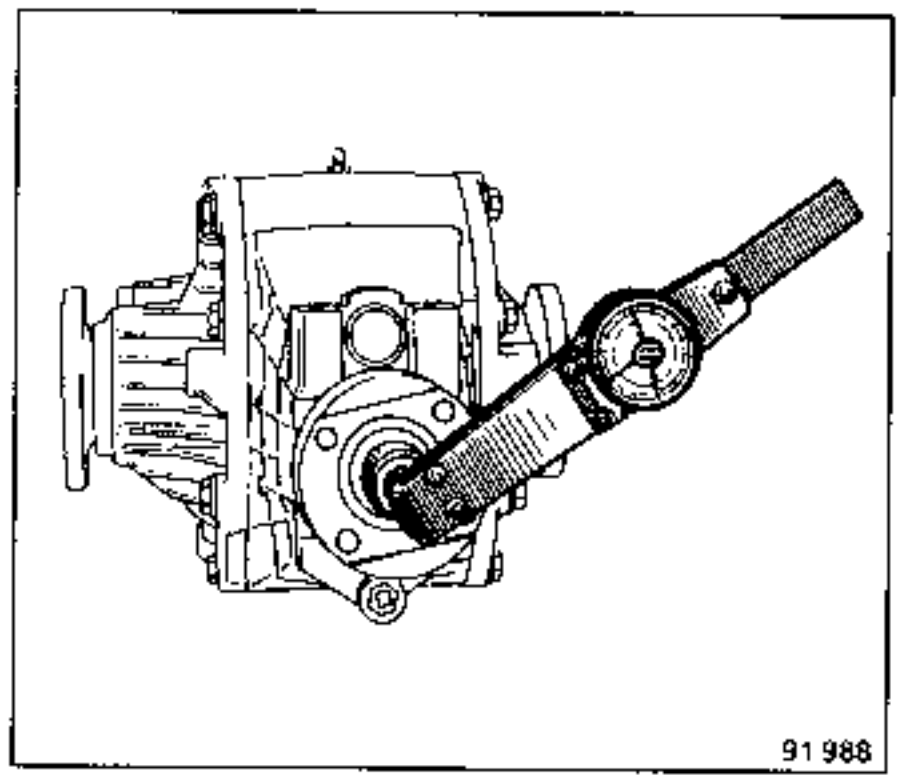
Type	Packaging	Part No	Units
MOLYKOTE BR2	1 kg tin	77 01 421 145	Sunwheel splines Visco coupling splines
CAF 4/60 THIXO	100 g tube	77 01 404 452	Backplate bolt leading into final drive casing
LOCTITE FRENBLOC (locking and sealing resin)	24 cc bottle	77 01 394 071	Crown wheel bolts Bolts securing rear transverse drive shaft to axle Bolts securing prop shaft to visco coupling

Differential bearing preload.



New bearings: 6.5 to 8 Nm

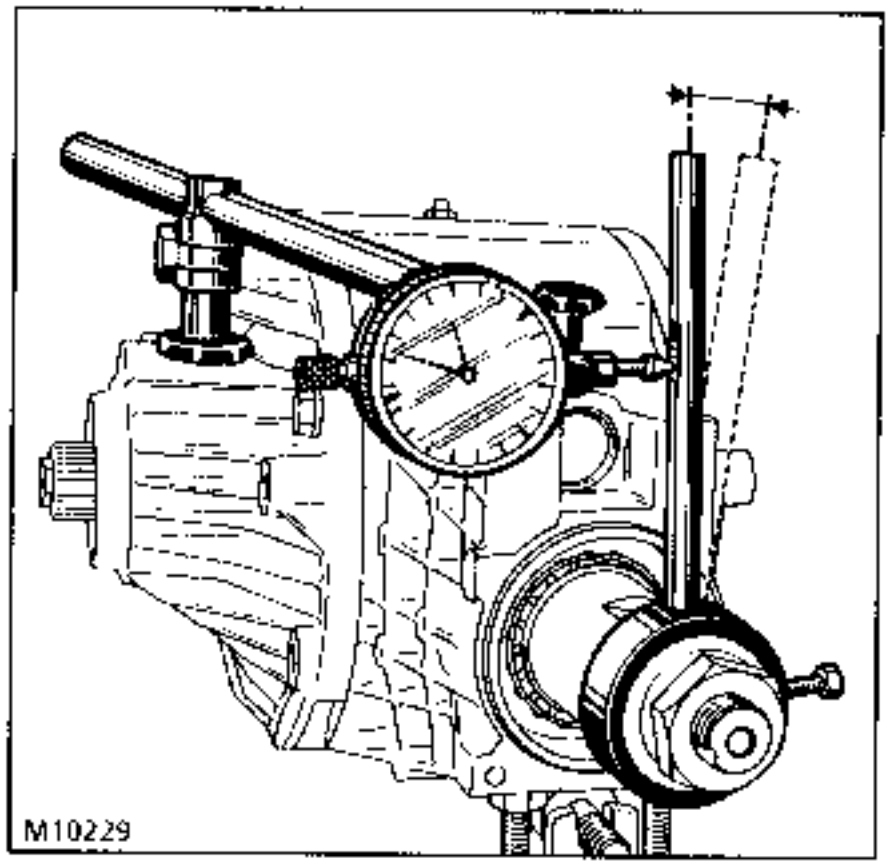
Final drive bearing preload.



New bearings: 3.5 to 4.5 Nm

The pinion protrusion cannot be adjusted.

BACKLASH



The backlash measured at the inlet flange (over a radius of 106 mm) must be between 0.60 and 0.90 mm.

MATCHED PARTS

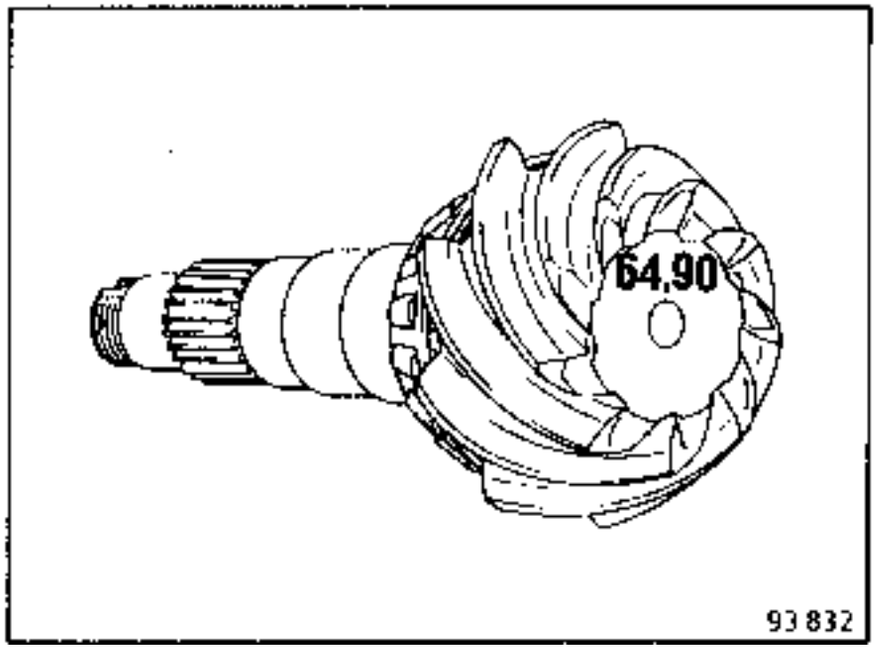
- Crown wheel and pinion.
- Final drive pinion and differential bearing cone and cup.

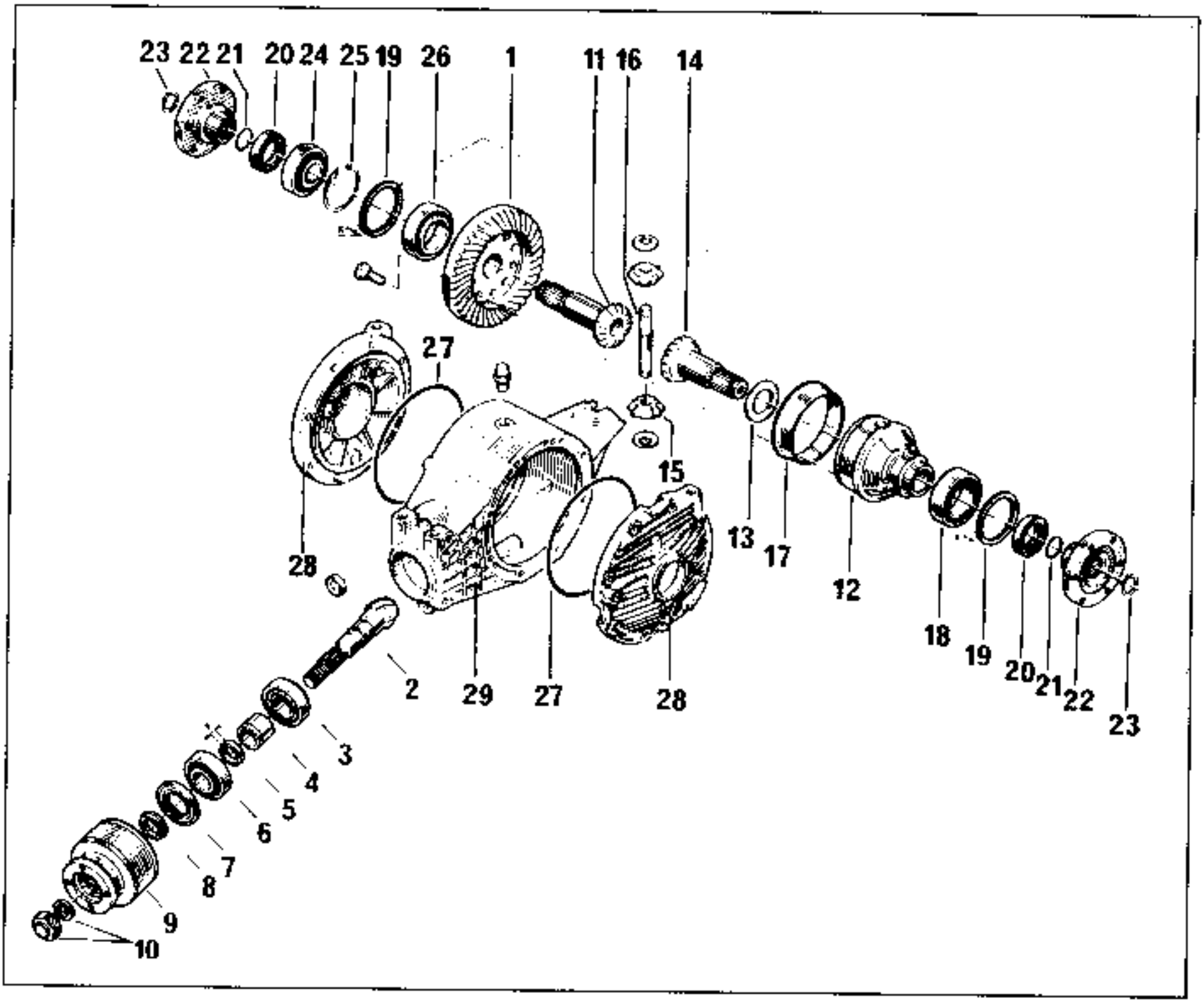
MATCHING OF FINAL DRIVE

The crown wheel and pinion are ground together in production and thus cannot be used separately.

If one of the parts has to be replaced then the other also has to be replaced.

There is a common marking on the crown wheel and pinion. Depending on the suffix, the front face of the pinion bears a second marking which is the value of the pinion protrusion (this value is between 64.70 and 65.20 mm).





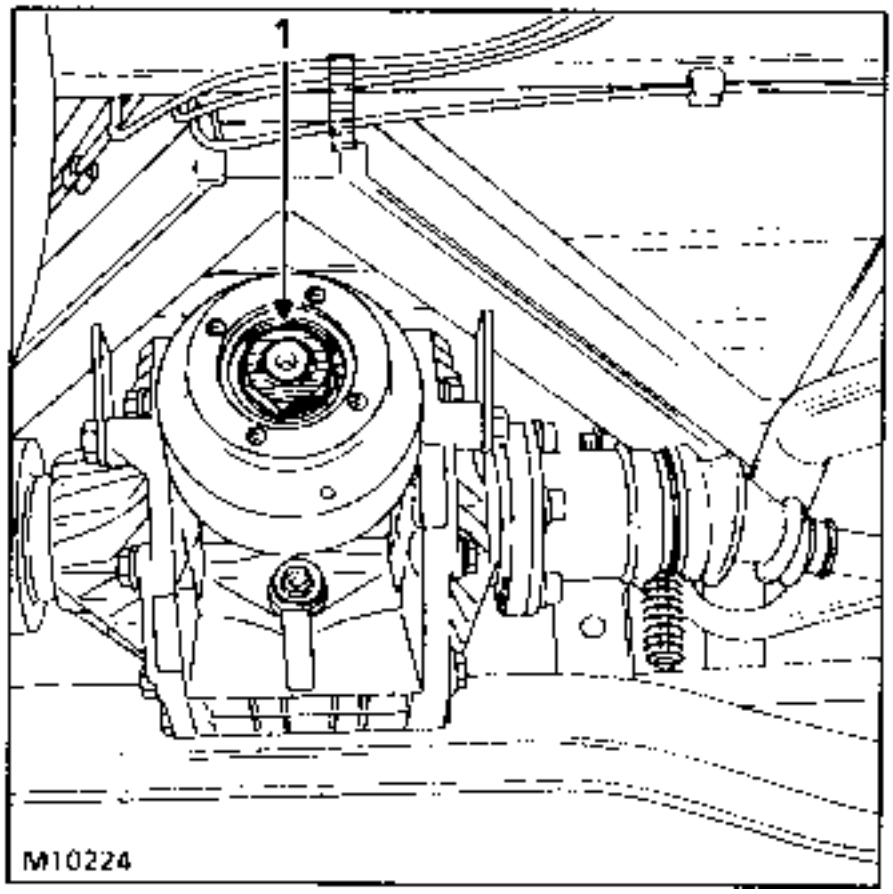
1 Crown wheel
2 Final drive pinion
3 Tapered roller bearing
4 Spacer
5 Preload adjusting spacer
6 Tapered roller bearing
7 Lip seal
8 Spacer
9 Visco coupling
10 Washer-nut
11 Righthand sunwheel
12 Differential unit
13 Shim
14 Lefthand sunwheel
15 Planet wheel
16 Planet wheel shaft
17 Axle sleeve
18 Tapered roller bearing
19 Shim
20 Lip seal
21 O ring seal
22 Drive shaft backplate
23 Circlip
24 Ball bearing
25 Circlip
26 Tapered roller bearing
27 Backplate O ring seal
28 Backplate
29 Final drive casing

TIGHTENING TORQUES (in daNm)	
Bolts securing drive shaft to backplate	6
Bolts securing drive shaft to visco coupling	6
Bolts securing rear axle to mounting	8
Bolts securing rear axle to bodywork	8

REMOVAL

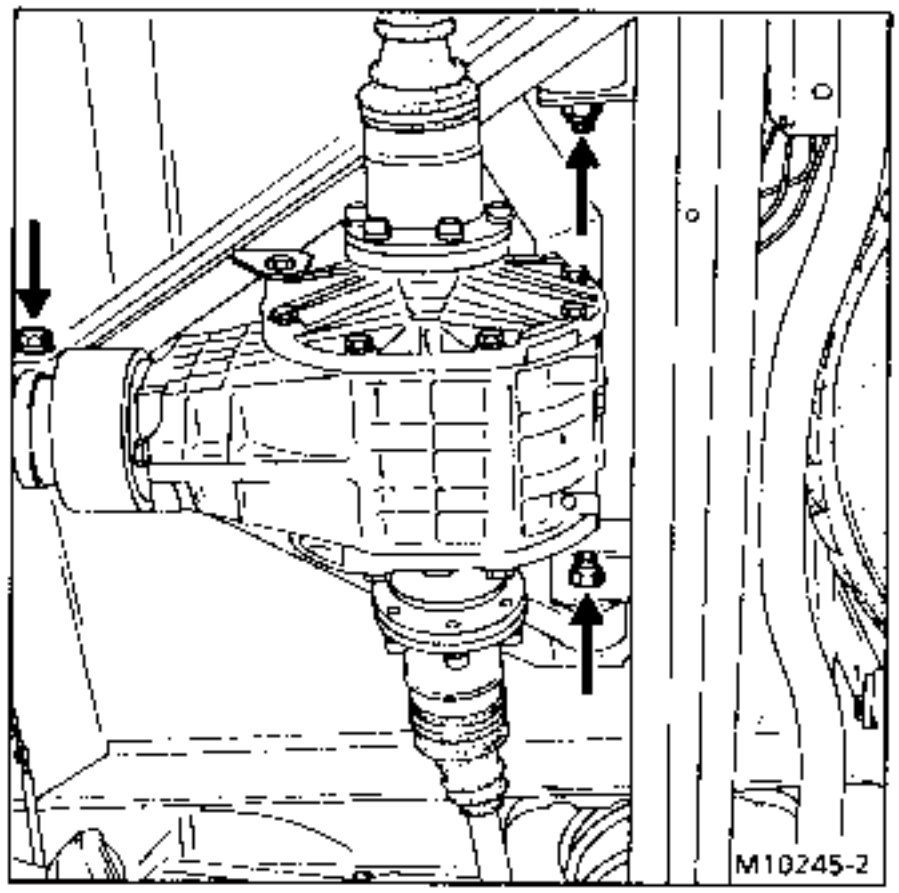
Drain the rear axle.

Uncouple:
- the prop shaft. If the final drive is being overhauled, slacken visco coupling nut (1);
- the transverse drive shaft



Fit a unit support jack of the DESVIL V710 or SEF 6050 type.

Remove the three bolts securing the mounting to the bodywork.



Disengage the mounting and rear axle assembly.

Uncouple the rear axle from its mounting (6 bolts).

REFITTING

Torque tighten the bolts and nuts as specified.

Refill the rear axle. .

ESSENTIAL SPECIAL TOOLING	
T.Ar. 1093	Final drive pinion bearing fitting tool
T.Ar. 1094	Differential bearing extractor
T.Ar. 1095	Drive shaft output backplate and seal fitting tool
T.Ar.1096	01 axle mounting
T.Ar.1097	Pinion preload locking tool
T.Ar.1098	Differential locking tool
T.Ar.1099	Final drive input flange seal fitting tool
T.Ar.1140	36 mm socket
Rou.604-01	X2 hub locking tool
Emb.717	Bearing fitting tool

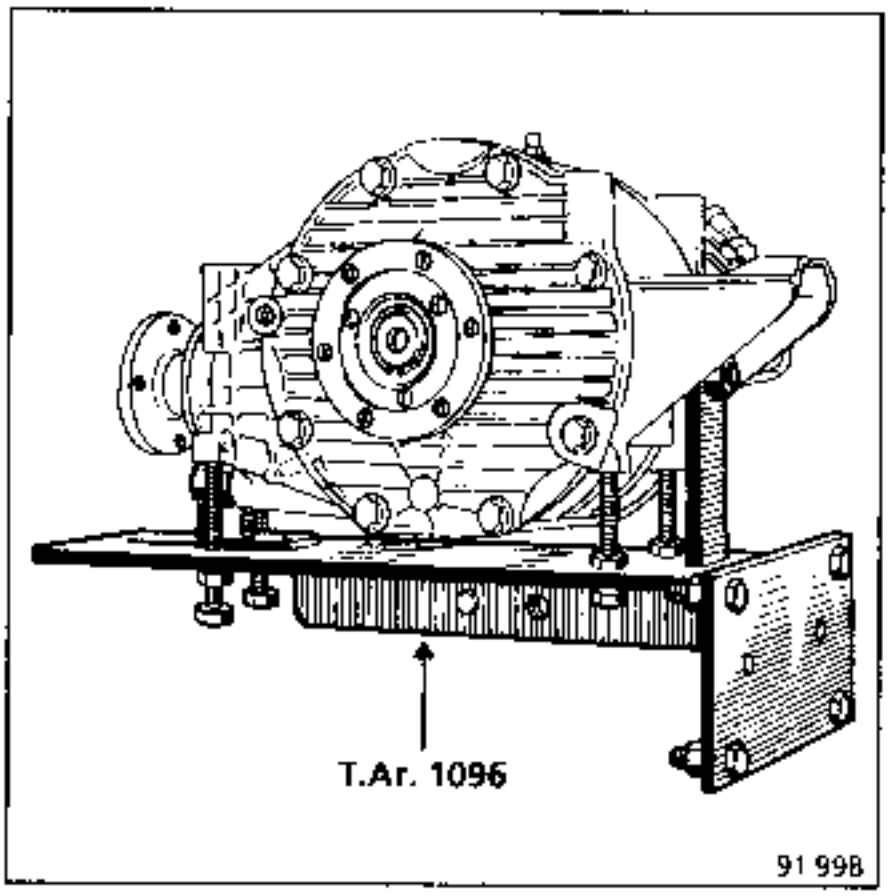
TIGHTENING TORQUES (in daNm)	
Pinion nut	**20**
Crown wheel bolt	**12 - 14**
Final drive backplate mounting bolt	5
Breather	1.5
Drain and refill plugs	2

CONSUMABLES
TRX 80 W gearbox oil: All parts and lip seals before reassembly
Loctite FRENBLOC: Crown wheel bolts Prop shaft and transverse drive shaft bolts
MOLYKOTE BR2 grease: Sunwheel splines Visco coupling splines

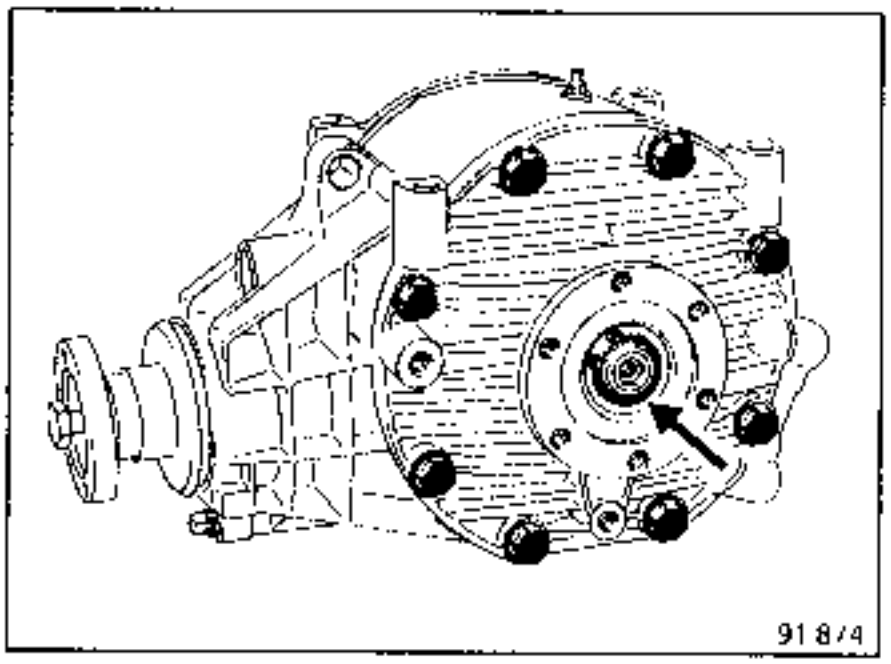
REMOVAL

Remove the final drive.

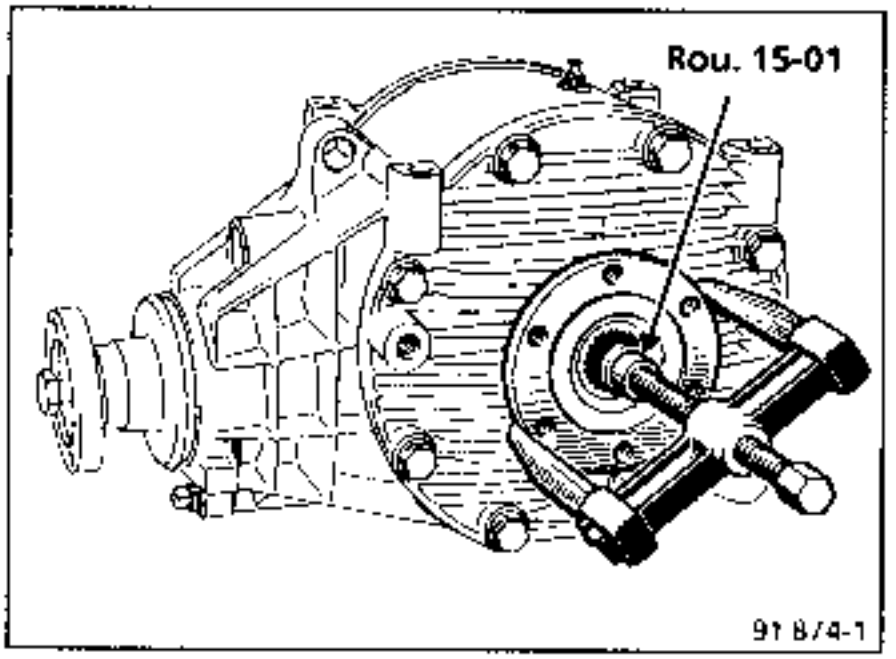
Place the assembly on stand T.Ar.1096.



Remove:
- the circlips securing the drive shaft backplates;



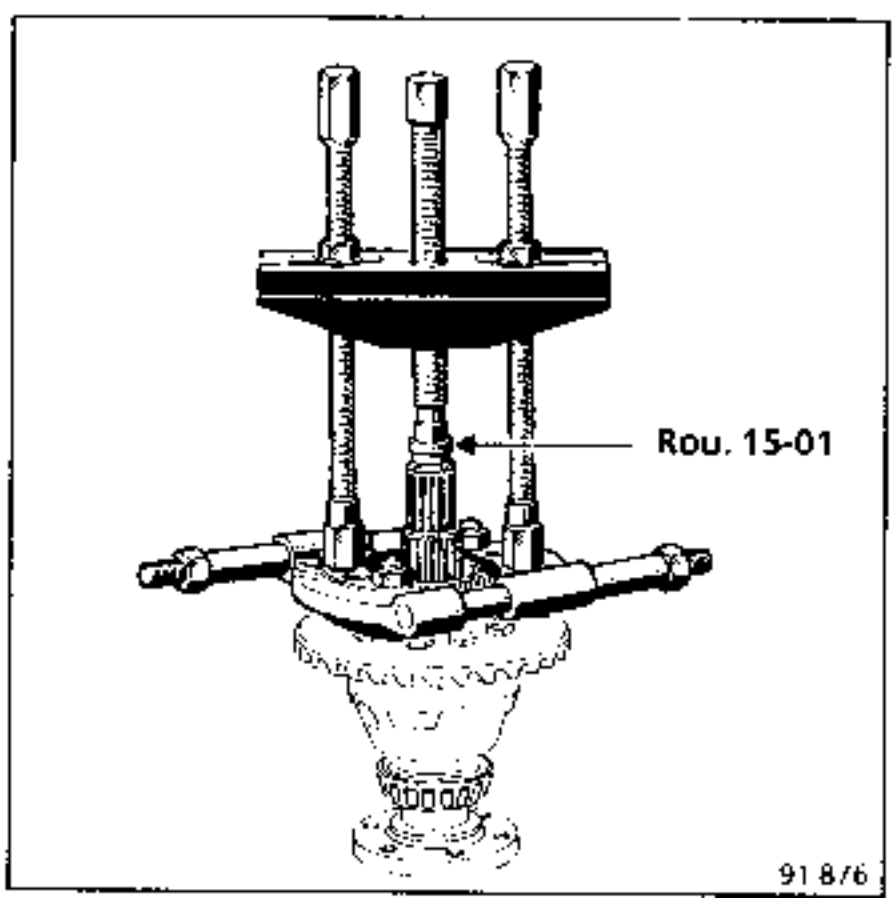
- the drive shaft backplates using a FACOM U32-120 extractor or the like, fitting shaft protecting end piece Rou.15-01;



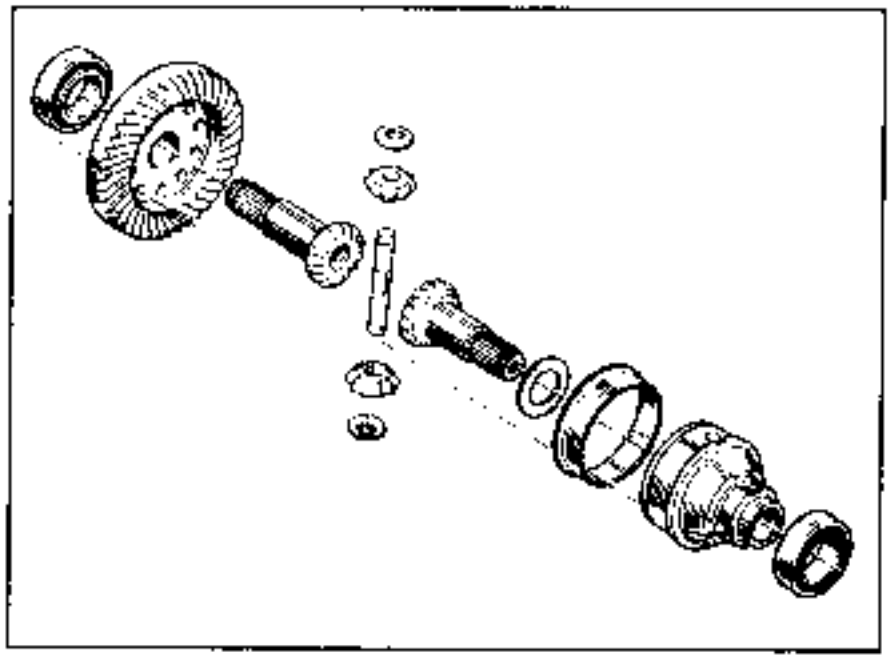
- the right-hand final drive backplate.

Take out the differential.

Using an extractor of the FACOM U53G - U53K type or the like, take out the bearings, fitting shaft protecting end piece Rou.15-01.



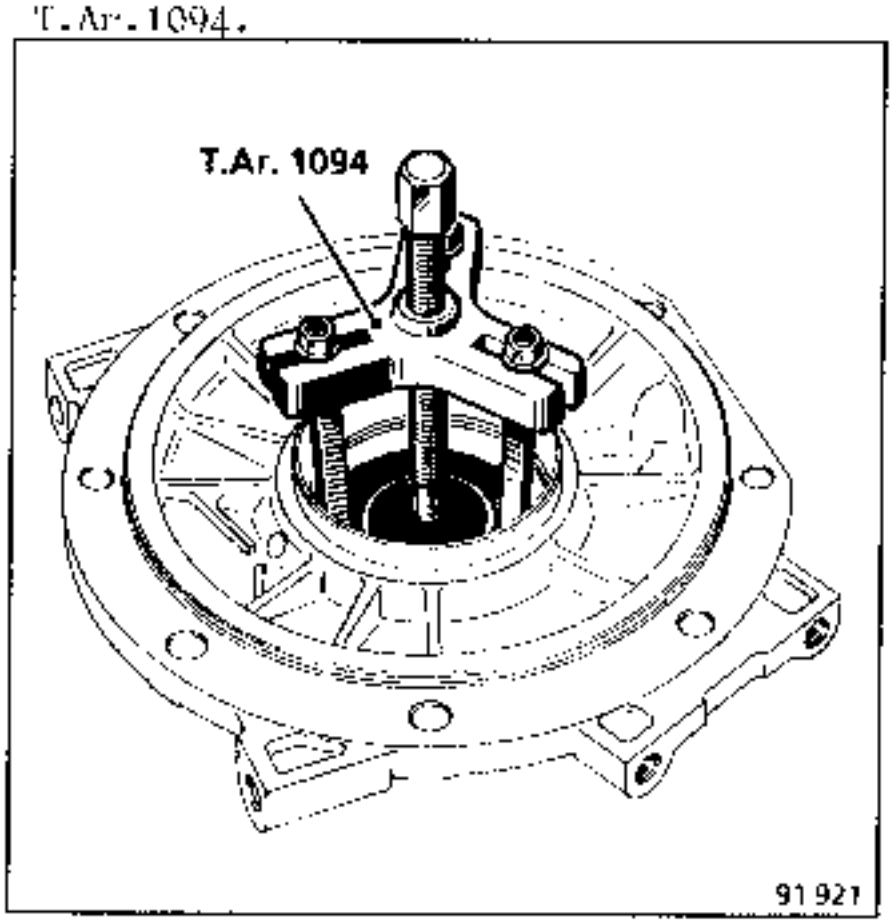
Remove:
- the bolts securing the crown wheel to the unit (bolts cannot be reused);



- the planet wheel shaft retaining axle sleeve.

Separate the various parts.

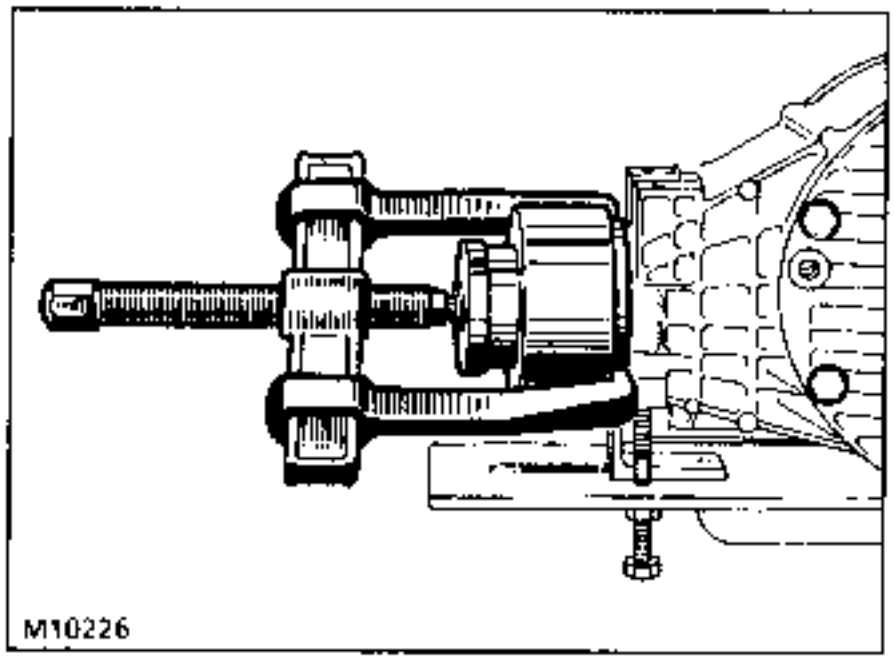
From the final drive backplates, remove the bearing races using tool T.Ar.1094.



Recover the shims found behind the bearing races and mark them.

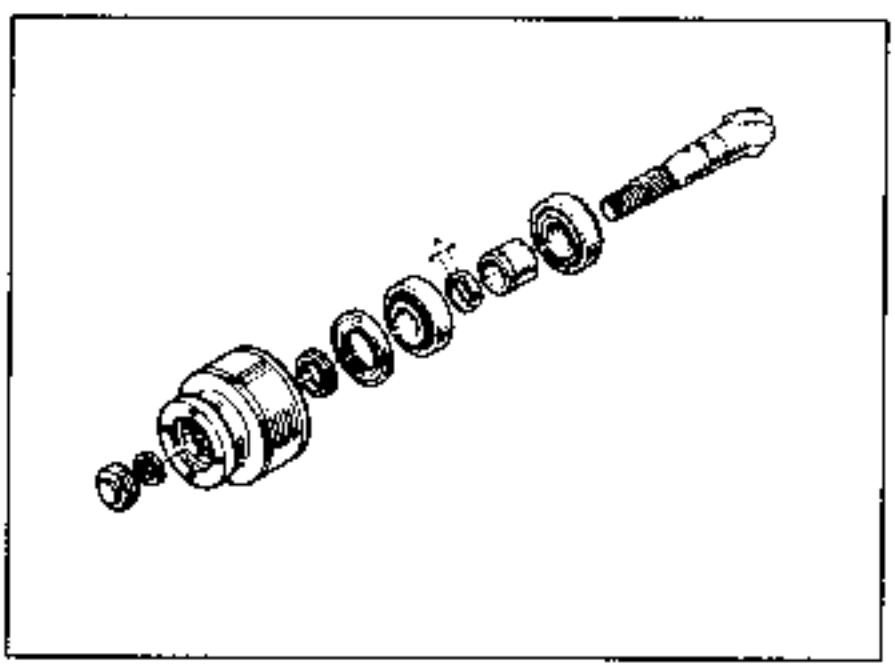
Removing the final drive pinion

Using an extractor of the FACOM U32-120 type or the like, take out the visco coupling.

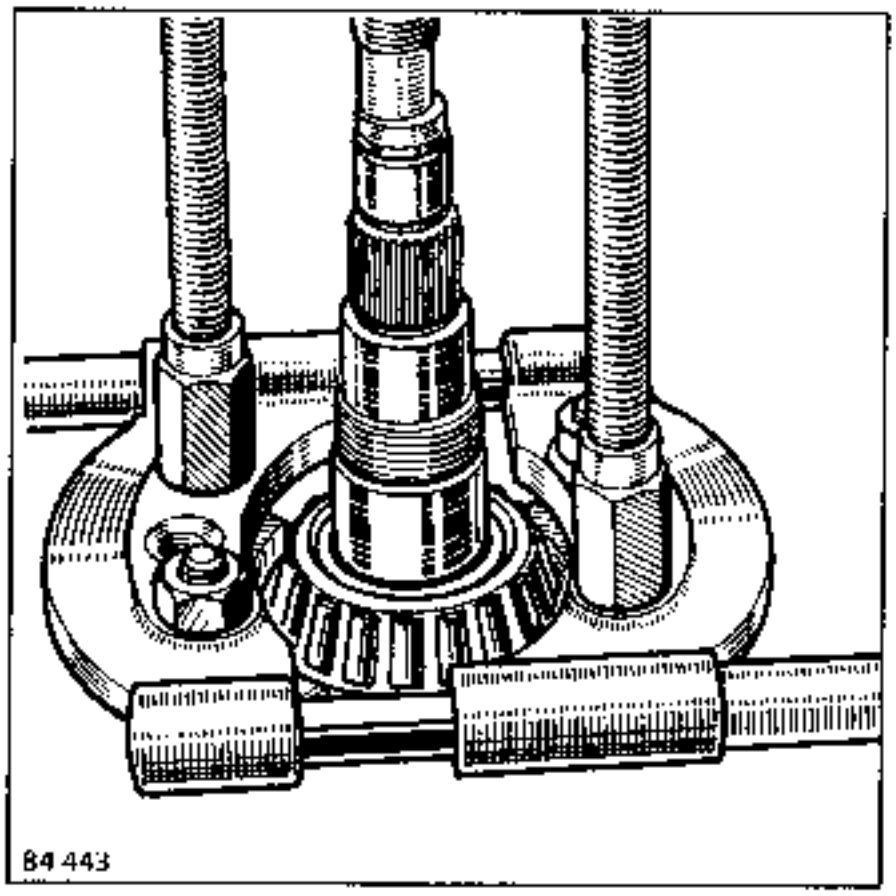


Knock out the final drive pinion using a bronze drift.

Remove the lip seal and bearing.

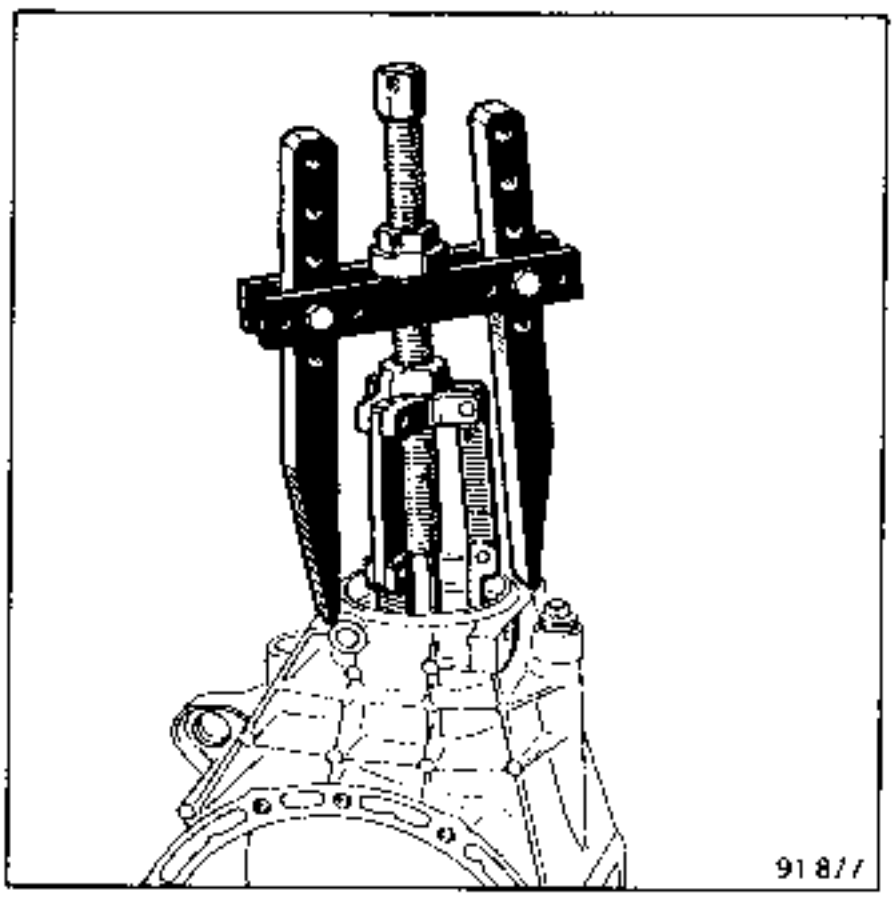


Using a tool of the FACOM U53G - U53E type or the like, take out the pinion bearing.



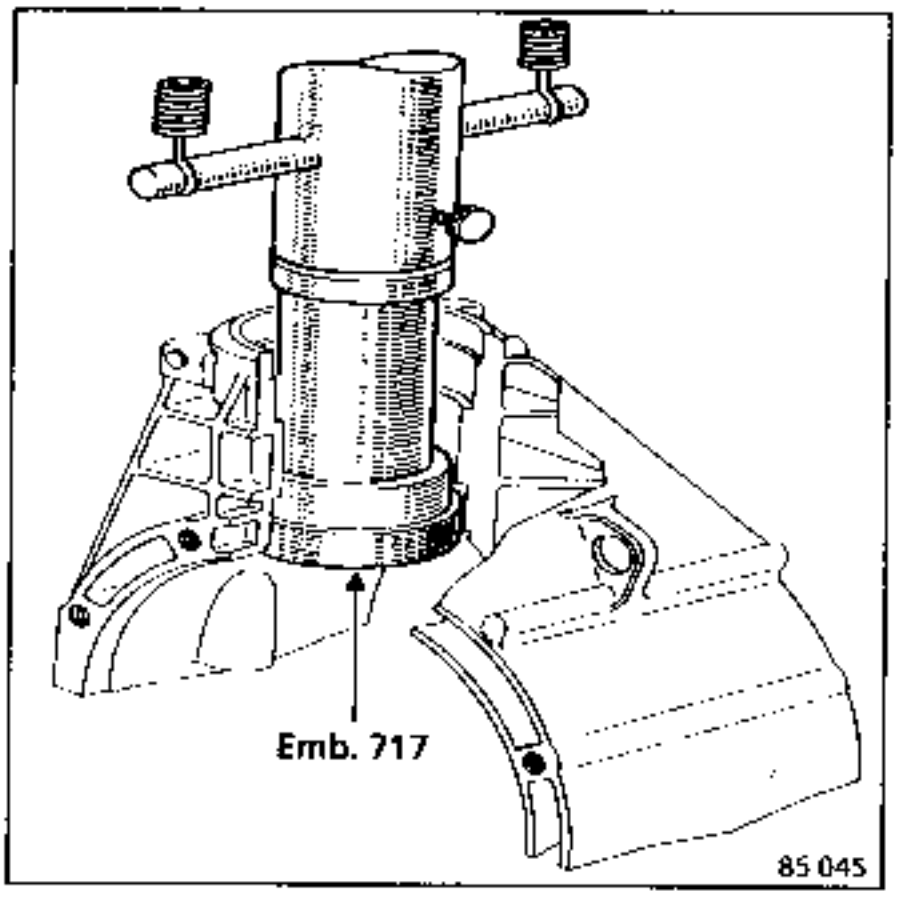
Remove the bearing races from the final drive pinion.

Use tool FACOM 040-050 (socket no 12).



Pinion bearing

Block the final drive on a press using tool Emb.717 to remove the bearing race.



Checking the parts

Check the condition of:
- the teeth;
- the lip seal bearing faces on the visco coupling and the drive shaft backplates.

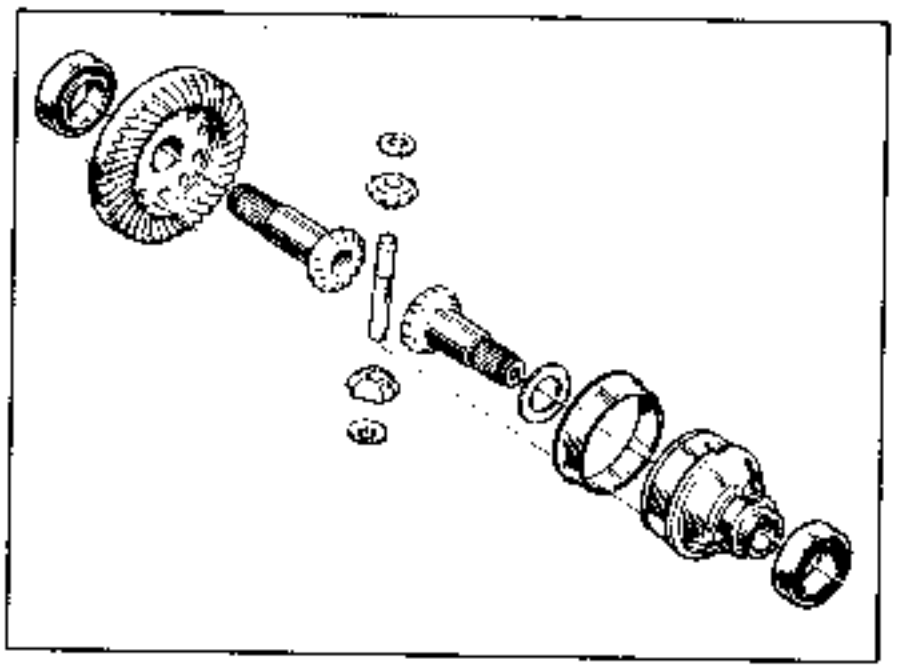
REASSEMBLY - ADJUSTMENTS

Reassembling the differential

Special Point:

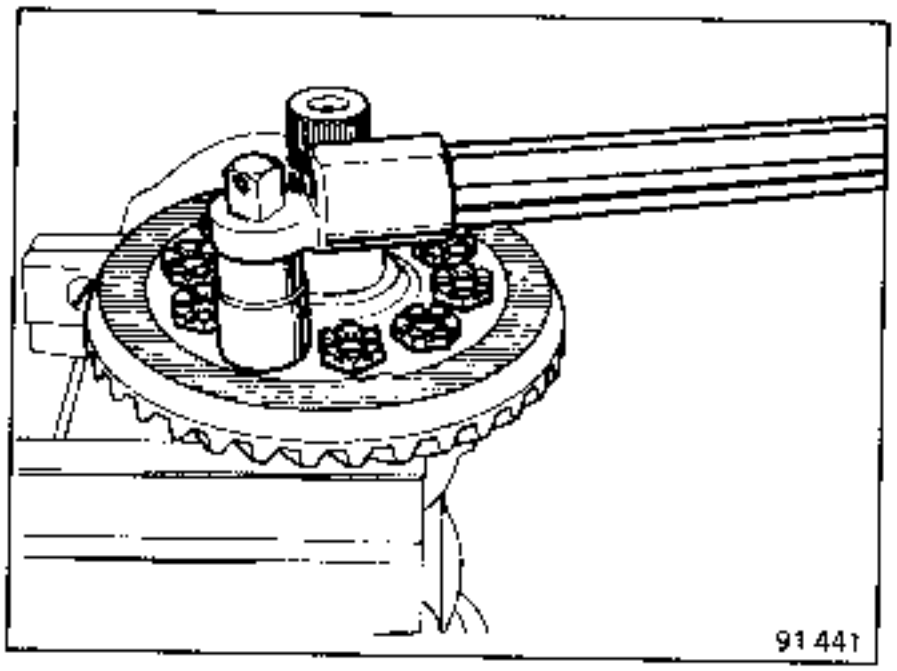
Lubricate all the parts before reassembly.

The bearing at the crown wheel end is larger than the bearing at the differential end.



Assemble the crown wheel on the differential using new bolts.

Torque tighten the bolts.



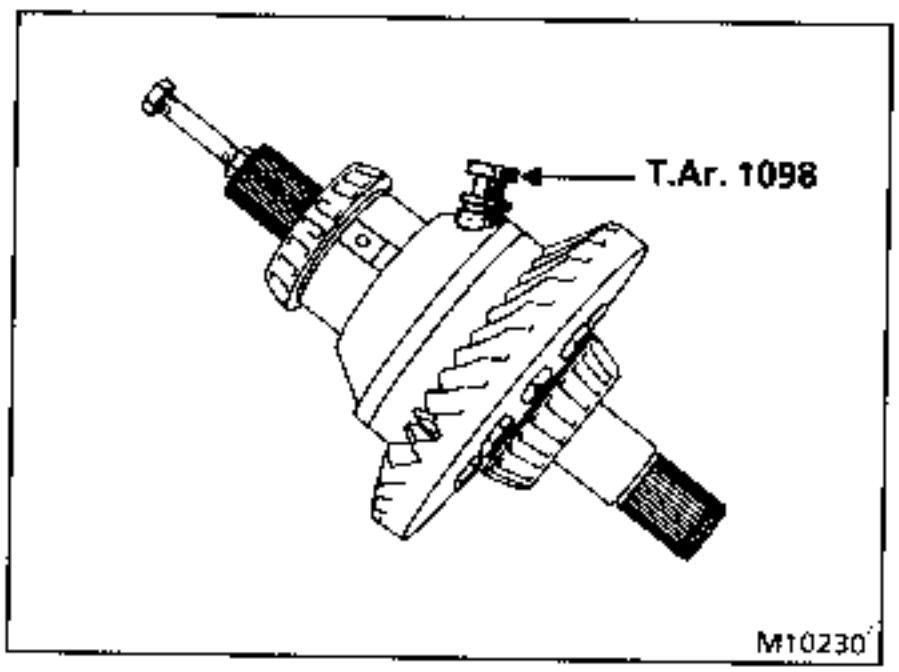
There are no special points regarding the reassembly of the bearing outer races. However, remember to refit the shims recovered on dismantling.

NOTE: if the ball bearings are replaced on the righthand backplate, the mounting circlip must be directed so that it is facing the oil duct in order to ensure correct lubrication.

ADJUSTING THE DIFFERENTIAL BEARING PRELOAD

Mount the lefthand backplate on the final drive casing.

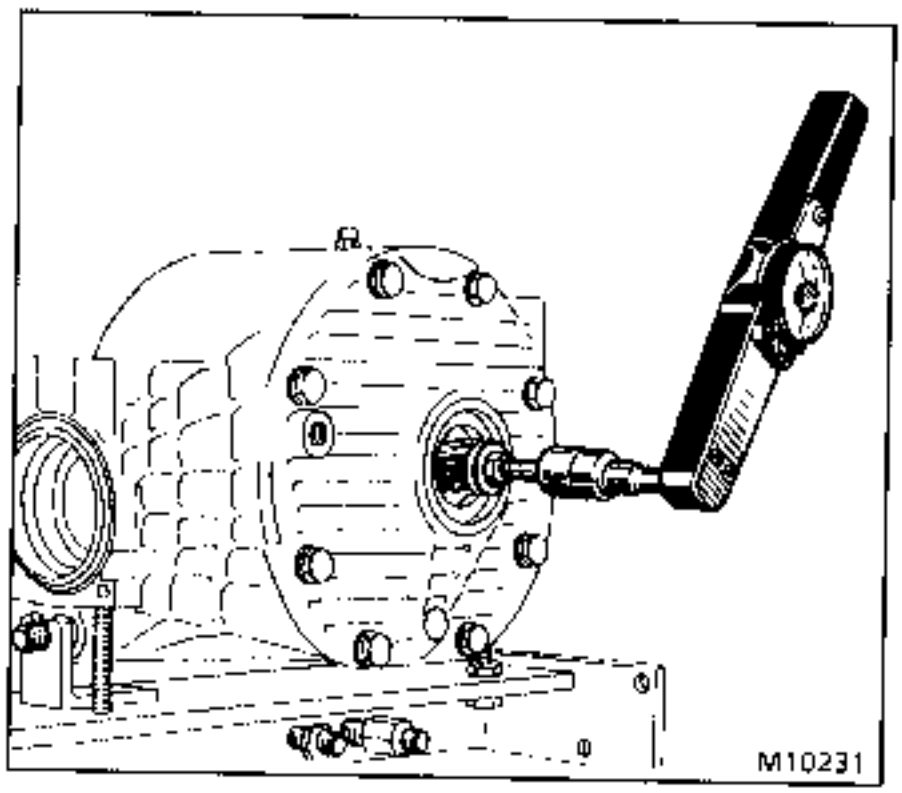
Fit differential locking tool T.Ar.1098 and mount the differential.



Fit the righthand backplate.

Torque tighten the backplate mounting bolts as specified.

Measure the preload using a precision torque wrench (for example FACOM R250 and attachments R232, J232) and a M10 x 50 bolt secured in the lefthand sunwheel.



New bearings

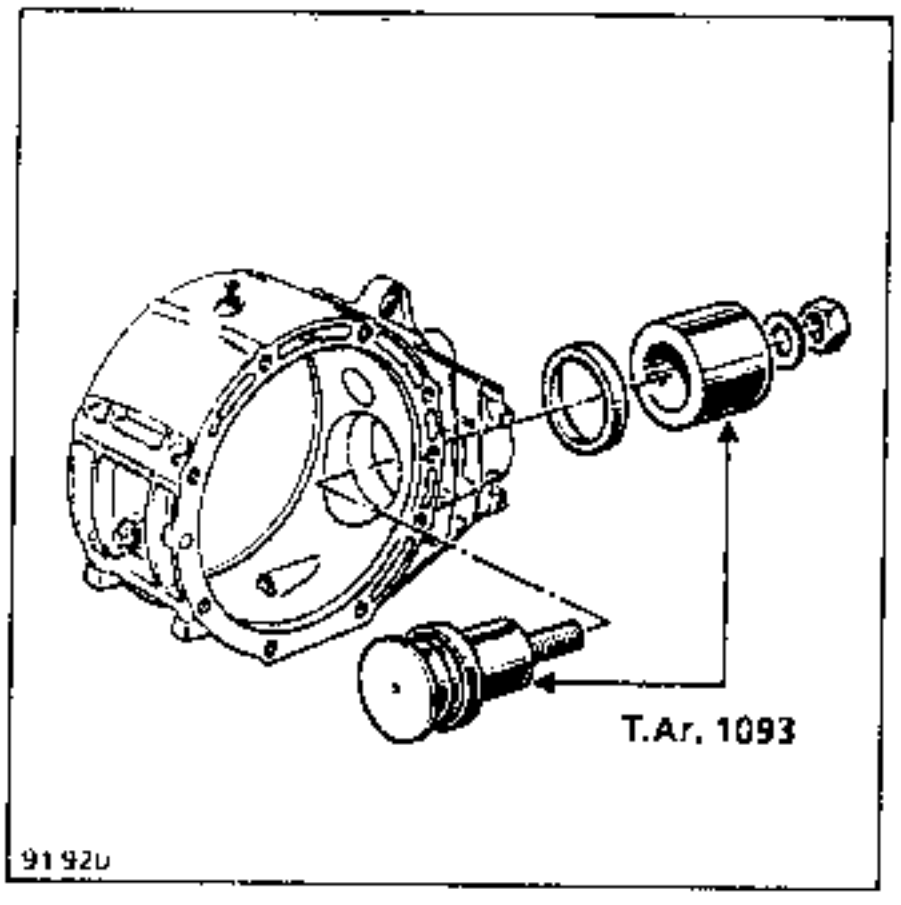
The differential should rotate under a load of between 6.5 and 8 Nm. This is the load required to maintain the rotational movement of the differential.

The preload is adjusted by altering the thickness of shims placed under the differential bearing races. The preload increases as the value of the shims increases and conversely.

After adjustment, remove the righthand backplate and differential.

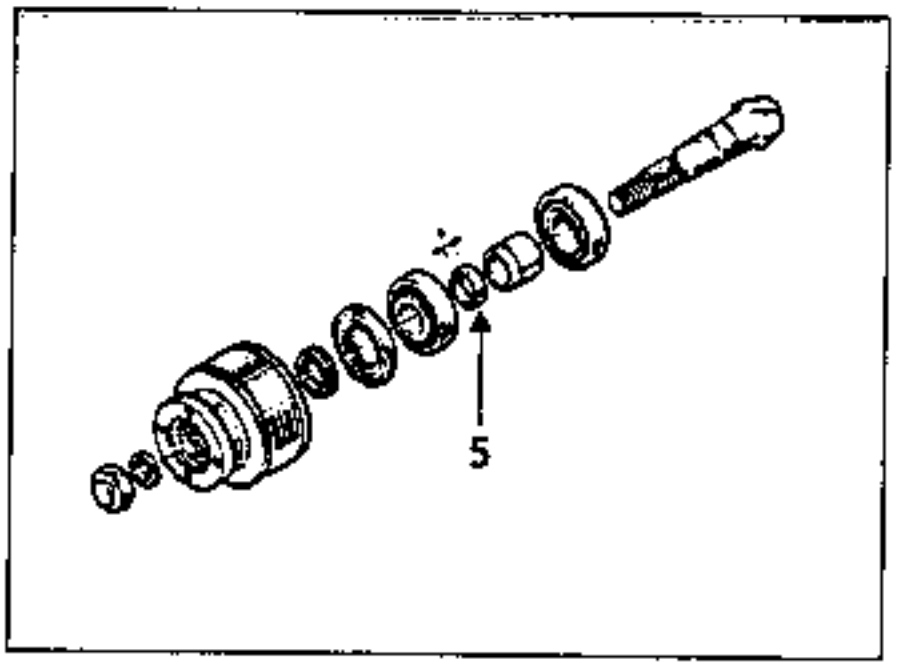
REASSEMBLING THE FINAL DRIVE PINION

Fit:
- the pinion bearing using a press and piece of tubing with a 36 mm bore;
- the bearing races using tool T.Ar. 1093.



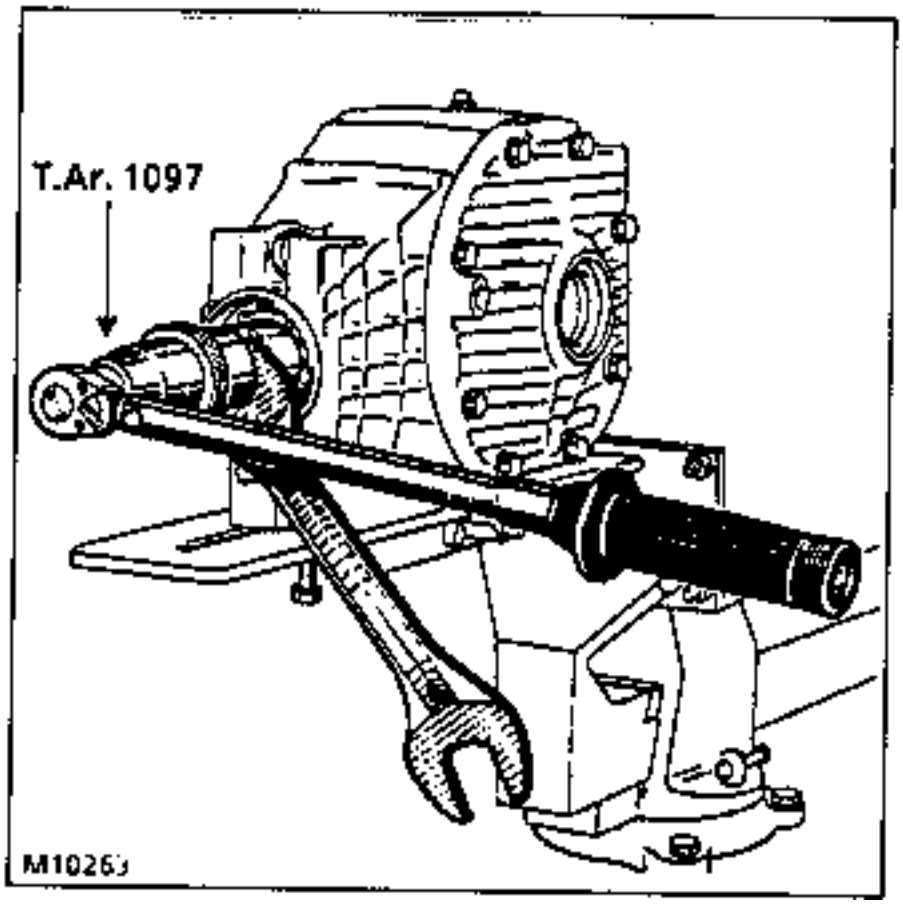
NOTE: the thinner race is fitted at the visco coupling end.

Fit the spacer and preload adjusting shim (5) recovered on dismantling to the final drive pinion.



Position the assembly in the final drive casing without the differential.

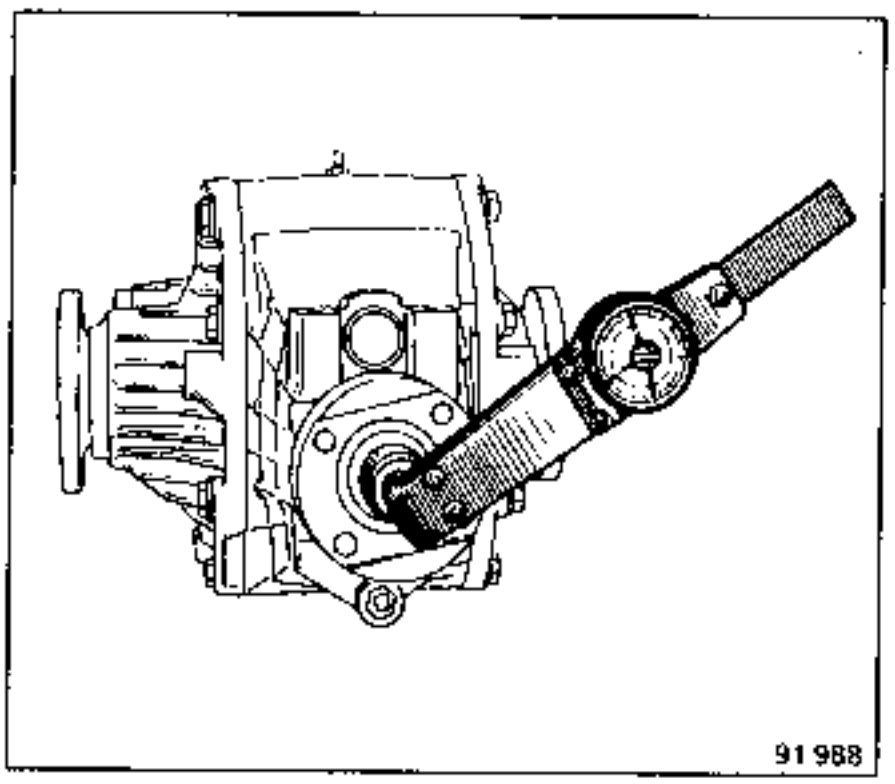
Fit the outer bearing, using tool T.Ar. 1097 and torque tighten the nut to 20 daNm, holding the tool using a 36 mm open-ended spanner.



ADJUSTING THE FINAL DRIVE PINION BEARING PRELOAD

Rotate the final drive pinion through several turns.

Using a precision torque wrench and tool T.Ar.1140, measure the rotational torque.



New bearings

The final drive pinion should rotate under a torque of between 3.5 Nm and 4.5 Nm.

If the setting is not correct, increase or decrease the thickness of shim (5). By increasing the thickness of the shim, , the preload decreases and vice versa.

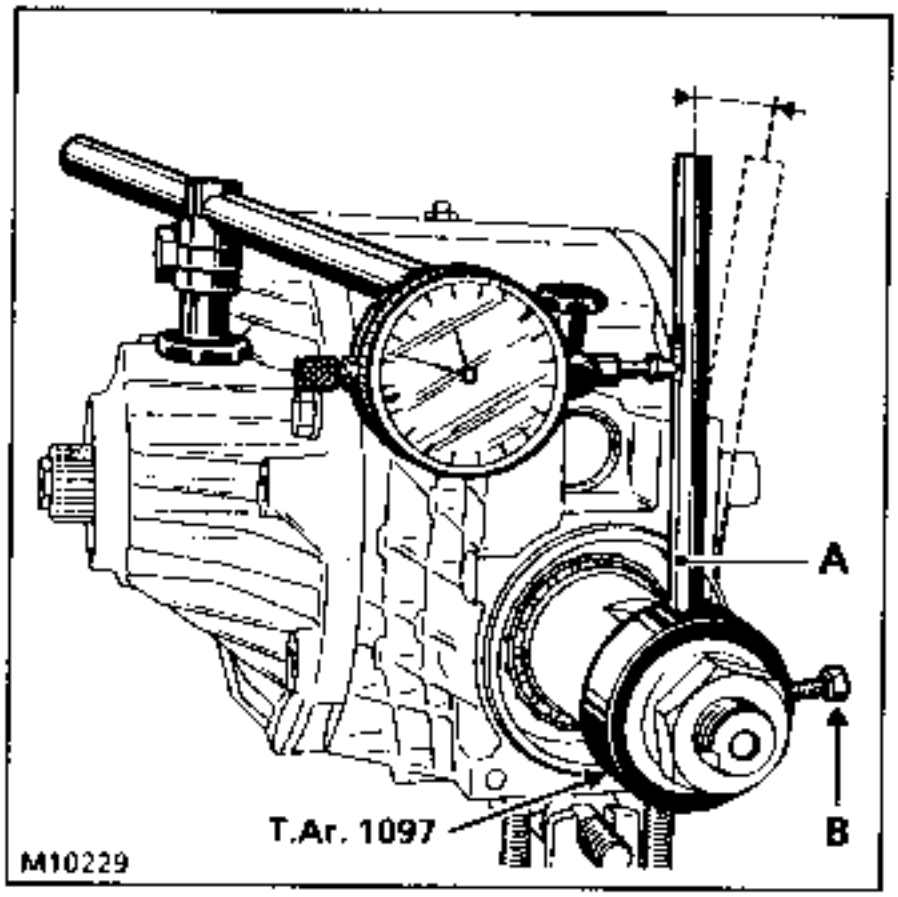
Shims are available in thicknesses from 6.60 to 7.12 mm increasing in steps of 0.06 mm.

Leave tool T.Ar.1097 in place to adjust the backlash.

ADJUSTING THE BACKLASH

This operation is performed when the differential and final drive pinion bearing preload have been adjusted.

Fit in place:
- the differential;
- the righthand backplate;
- the clock gauge mounting on one of the backplate securing points.



Tool (A) is fitted on socket T.Ar.1097, locked by bolt (B), and the tip of the clock gauge must be placed on the mark (106 mm away from the centre of the pinion).

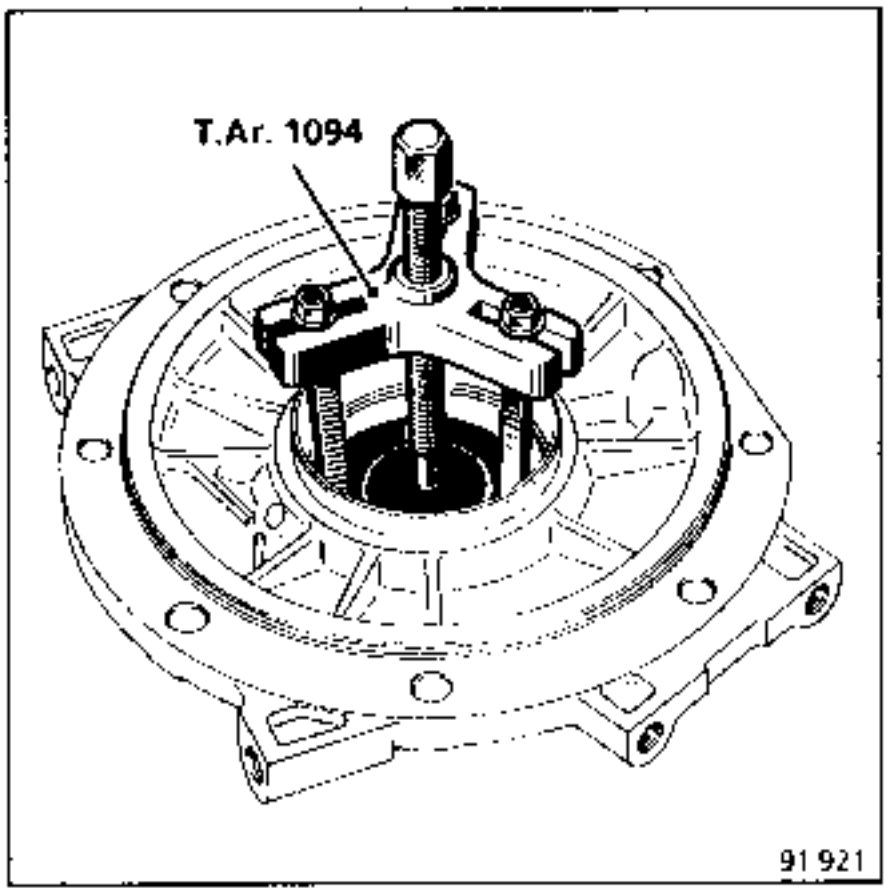
Measure the backlash by turning the nut gently.

Rotate the pinion, read off the backlash several times and calculate the mean figure.

The backlash should be between 0.6 and 0.9 mm.

If the backlash is not correct, remove the righthand and lefthand backplates.

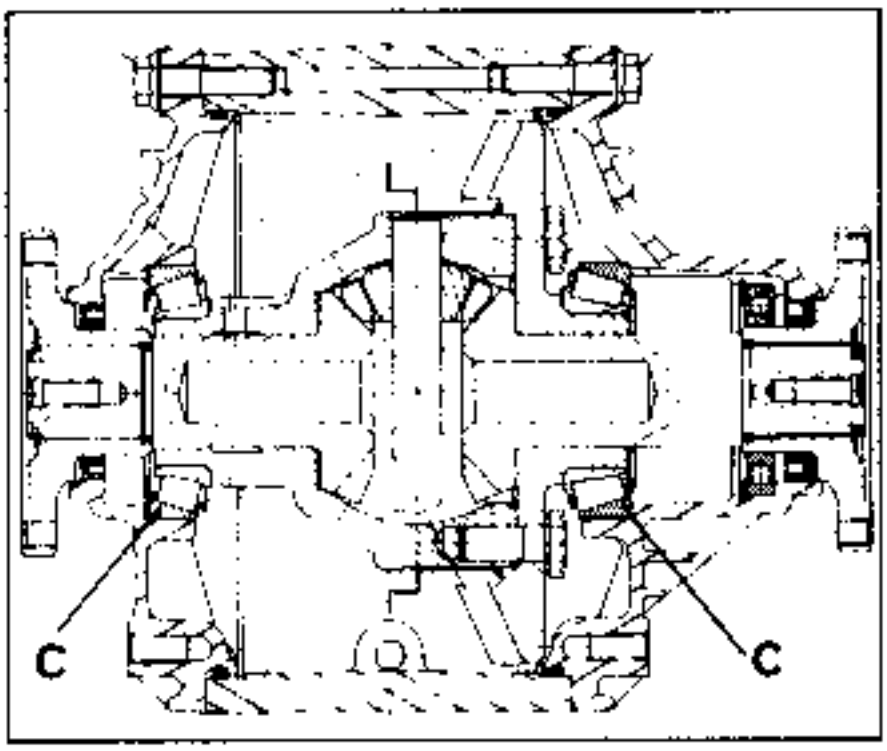
Remove the bearing races from the final drive backplates using tool T.Ar.1094.



Recover shims (C) found behind the bearing races.

To decrease the backlash, on the side opposite the crown wheel reduce the thickness of the shims by the amount which is to be made up on the crown wheel side (in order to keep the same bearing preload).

To increase the backlash, proceed in the opposite way. A variation of 0.02 mm shim thickness will vary the backlash by approx 0.1 mm.

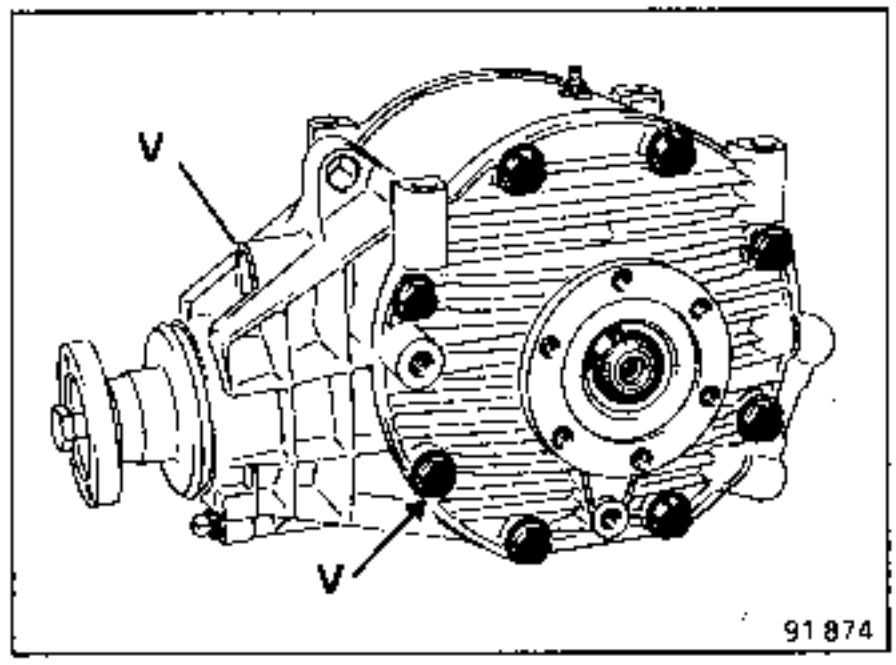


Check the backlash after reassembling the backplates.

REASSEMBLY

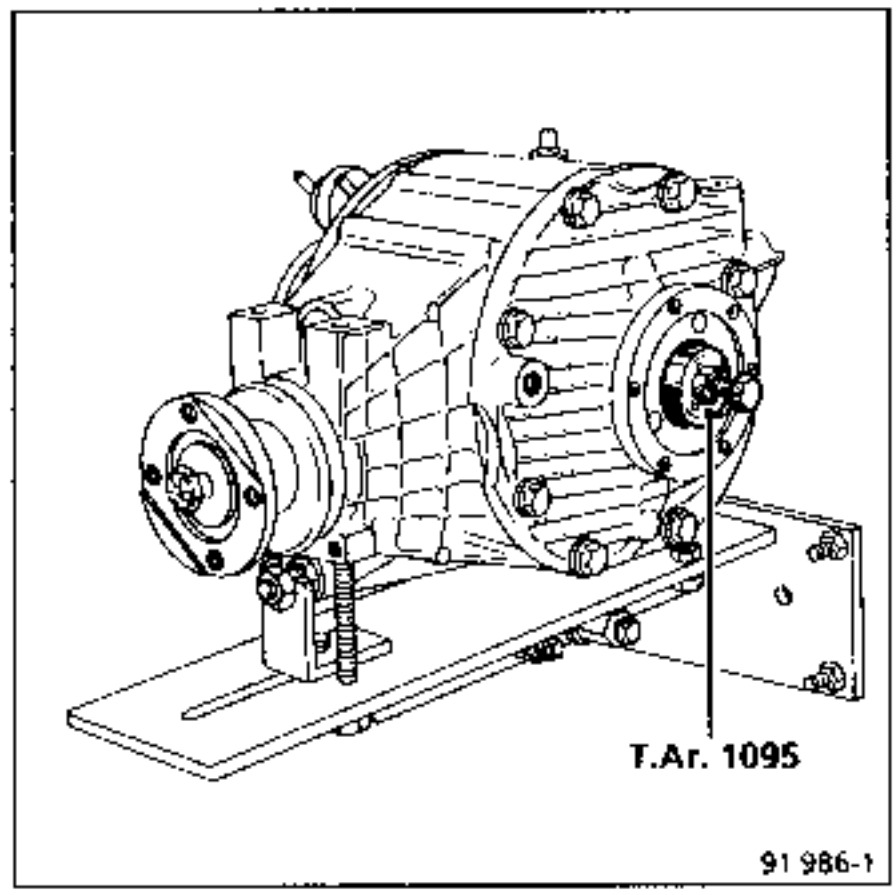
The two bolts (V) on the righthand and lefthand backplates leading into the final drive casing must be coated with CAF 4/60 THIXO paste.

Torque tighten the bolts.



Ensure that the O ring seals are fitted on the sunwheels.

Refit the lip seals and drive shaft backplates using tool T.Ar.1095.



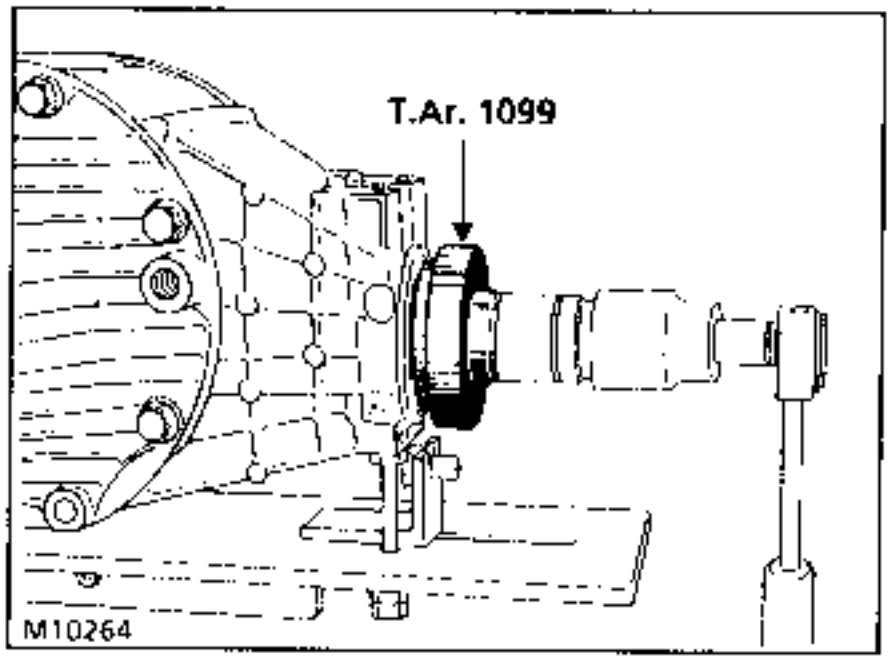
Check that the circlips are correctly positioned in the sunwheel groove.

FITTING THE VISCO COUPLING

Fit tool T.Ar.604-01 on each drive shaft backplate.

Remove tool T.Ar.1097.

Using tool T.Ar.1099, fit the seal in place.

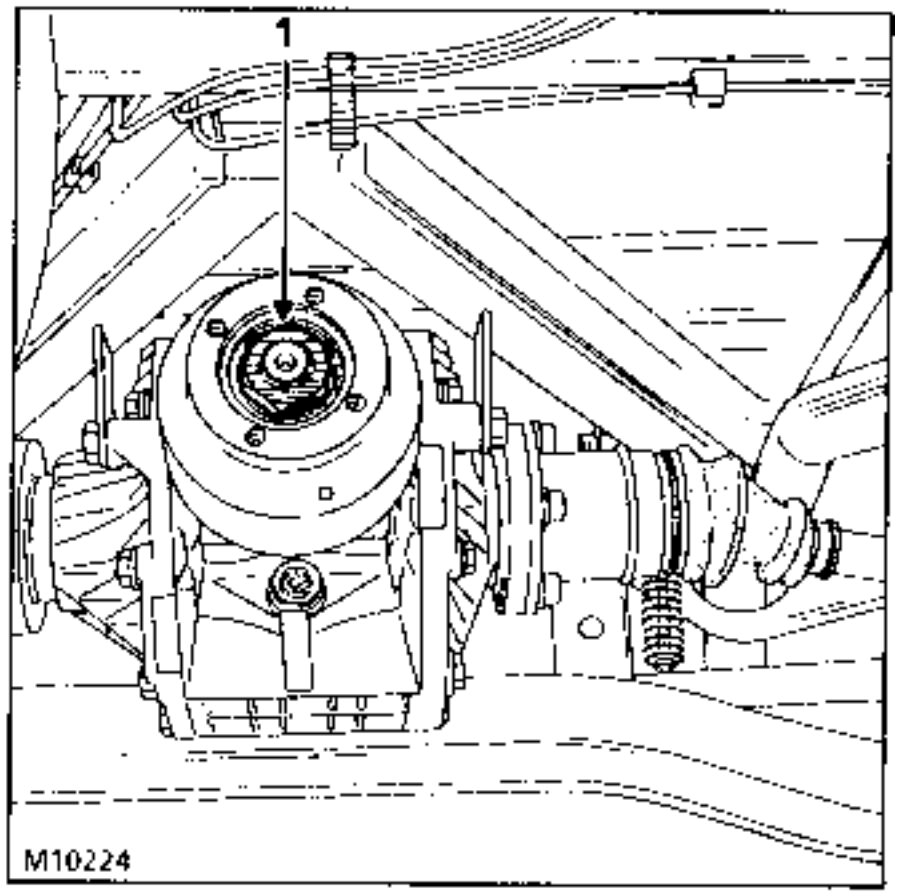


Grease the visco coupling splines.

Fit the visco coupling on the final drive pinion shaft splines.

Fit the washer and a new nut(1).

Torque tighten the nut to 20 daNm.



Lock the nut.

Parts to be replaced systematically

When they have been removed:

the bolts securing the crown wheel tothe differential unit;
- the lip seals;
- the O ring seals;
the visco coupling mounting nut;
- the differential bearings;
- the final drive pinion shaft bearings.

ESSENTIAL SPECIAL TOOLING	
T.Ar. 1099	Final drive input flange seal fitting tool

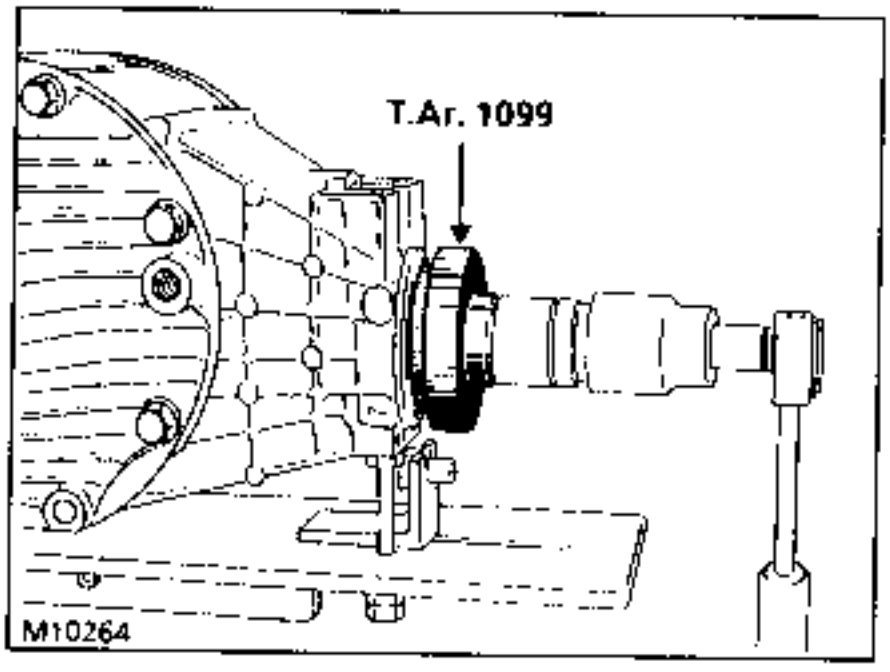
REMOVAL

Remove the visco coupling use an extractor (see relevant section) and spacer.

Take out the worn seal using a screw-driver.

Grease the outside and inside of the seal and position it on tool T.Ar.1099.

Fit the seal with the nut and a spacer.



Grease the visco coupling splines.

Torque tighten.

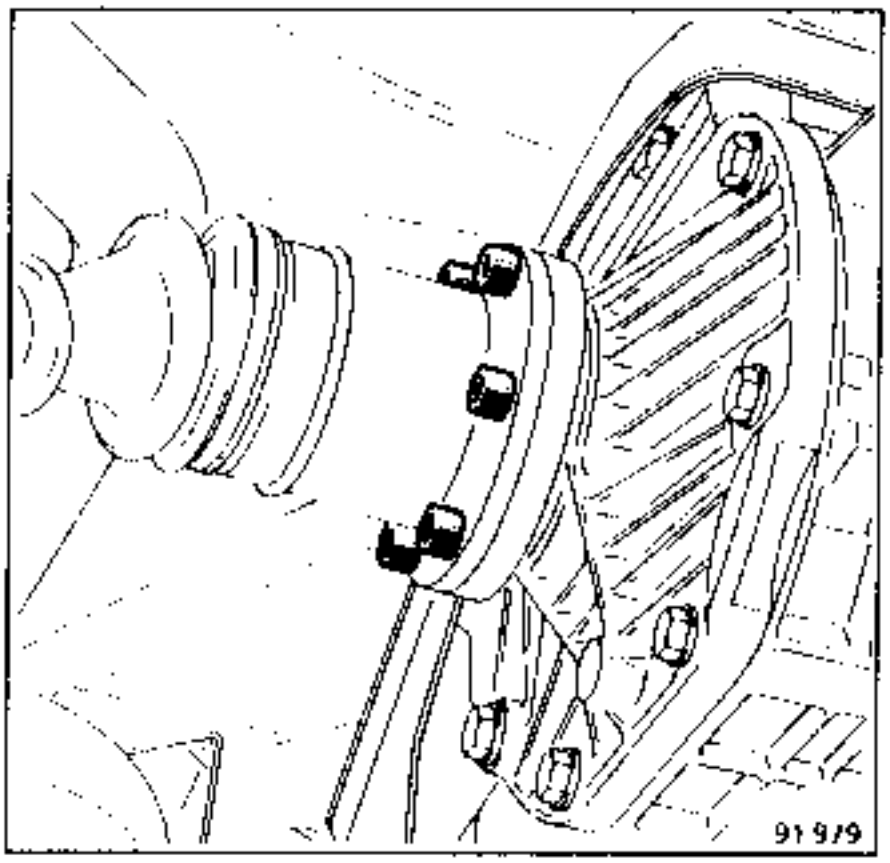
Top-up the oil in the rear axle.

ESSENTIAL SPECIAL TOOLING	
T.Ar. 1099	Drive shaft output plate seal fitting tool

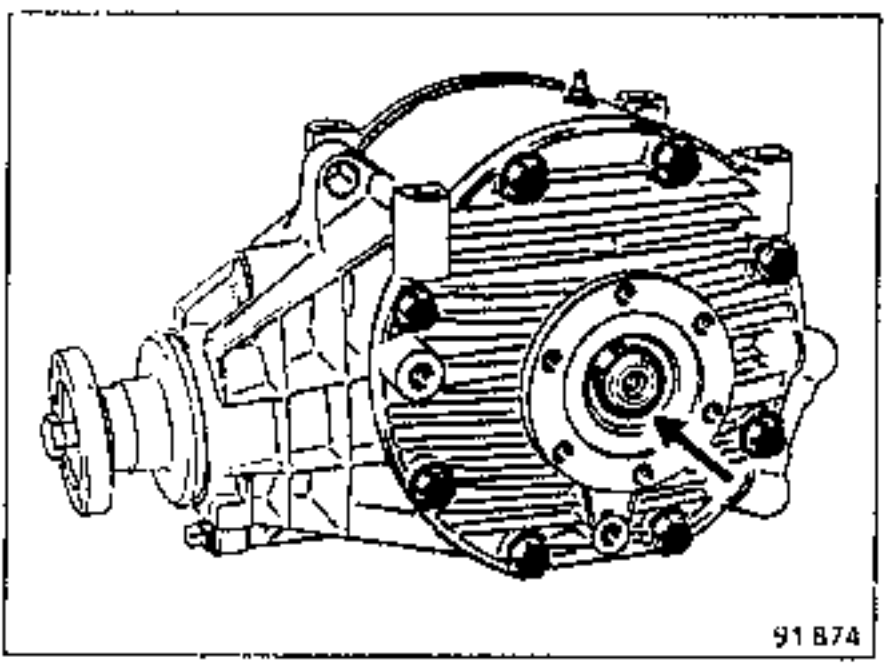
TIGHTENING TORQUE (in daNm)	▽
Drive shaft mounting bolts	6

Drain the rear axle.

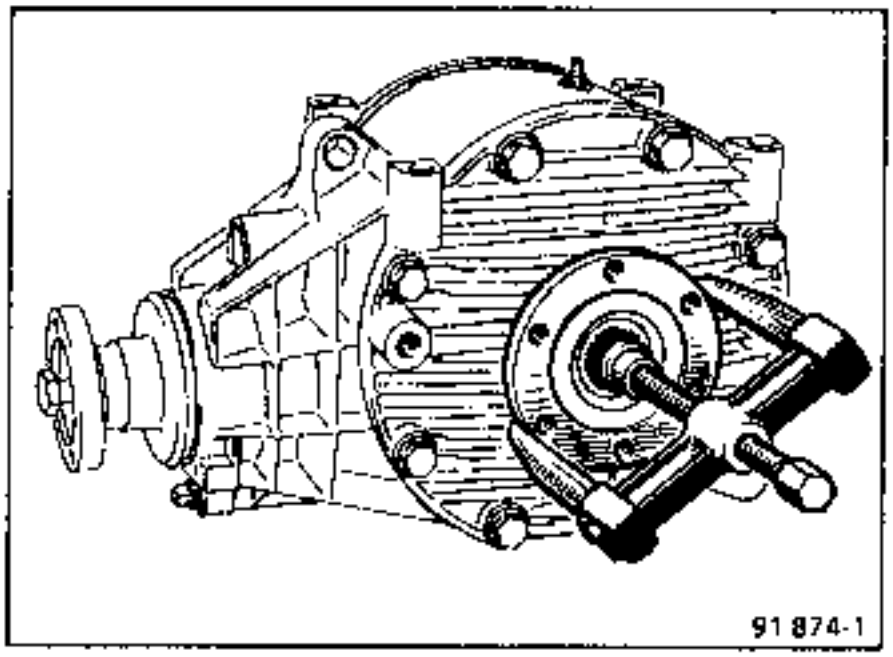
Uncouple the drive shaft on the side in question.



Remove:
- the sunwheel circlip;



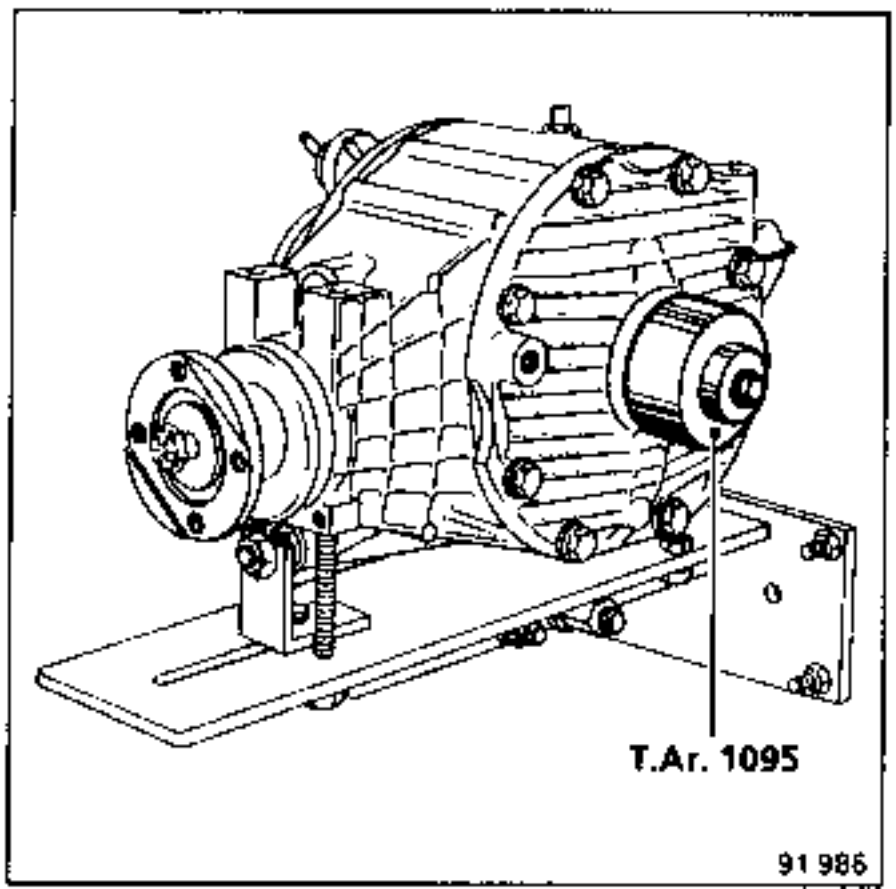
- the drive shaft plate using a tool of the FACOM U32-120 type or the like and fitting shaft protecting end piece Rou.15-01.



Take out the seal using a screwdriver.

REFITTING

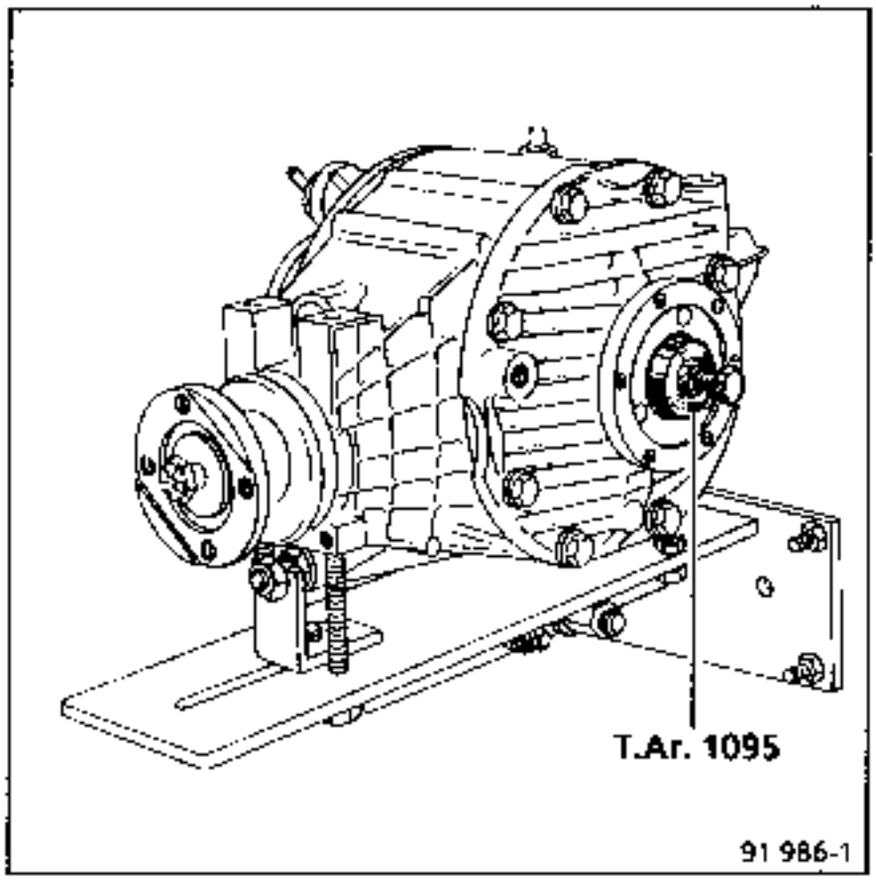
The lip seal is refitted using tool T.Ar.1095 which determines the position of the seal.



NOTE: the outer diameter of the righthand and lefthand lip seals is different:
- righthand seal: 64 mm diameter
- lefthand seal : 62 mm diameter.

Check that the O ring seal is fitted on the sunwheel.

Refit:
- the drive shaft plate using tool T.Ar.1095;

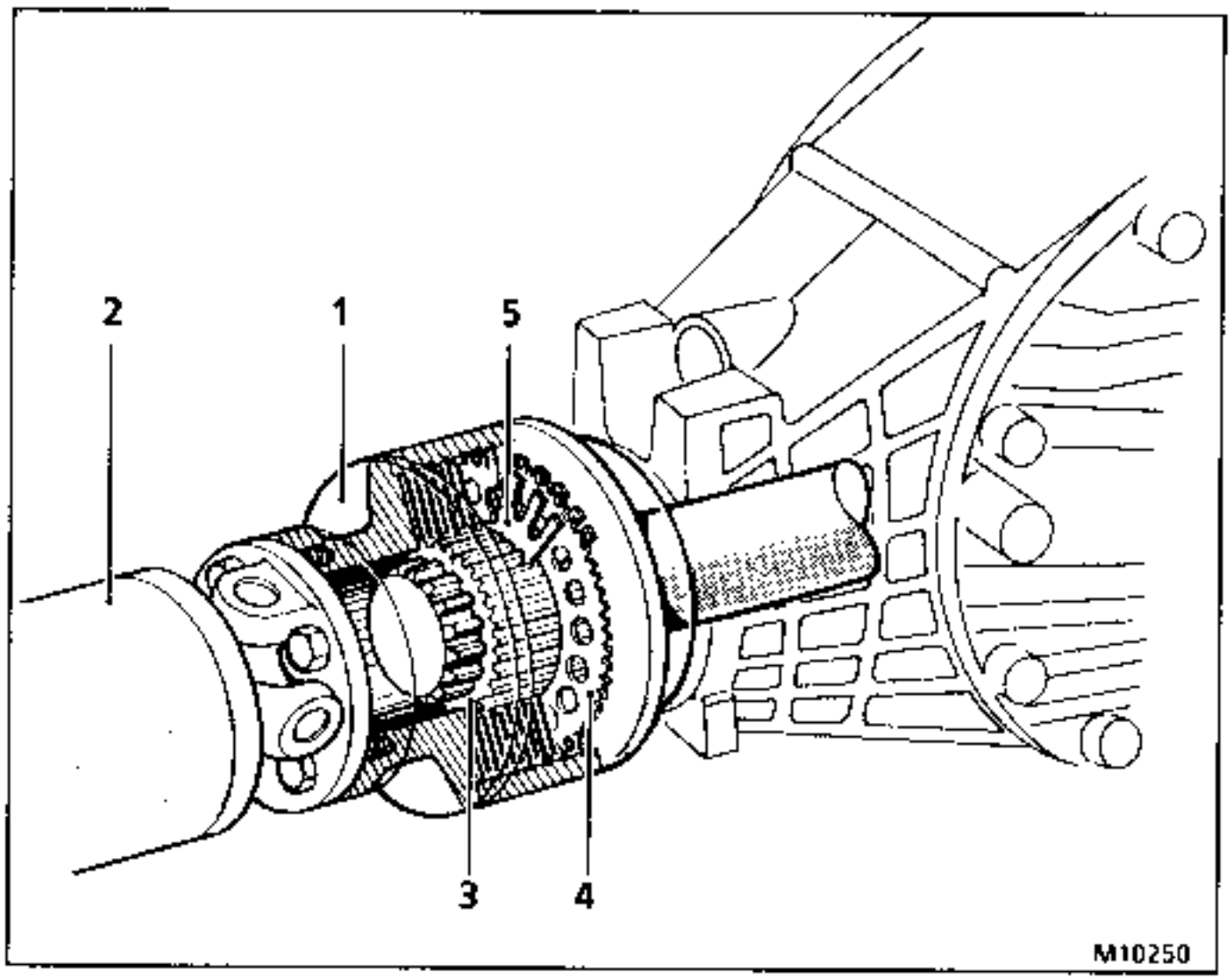


- the circlip;
- the drive shaft.

Torque tighten the bolts as specified.

Fill the axle with the recommended oil.

DESCRIPTION

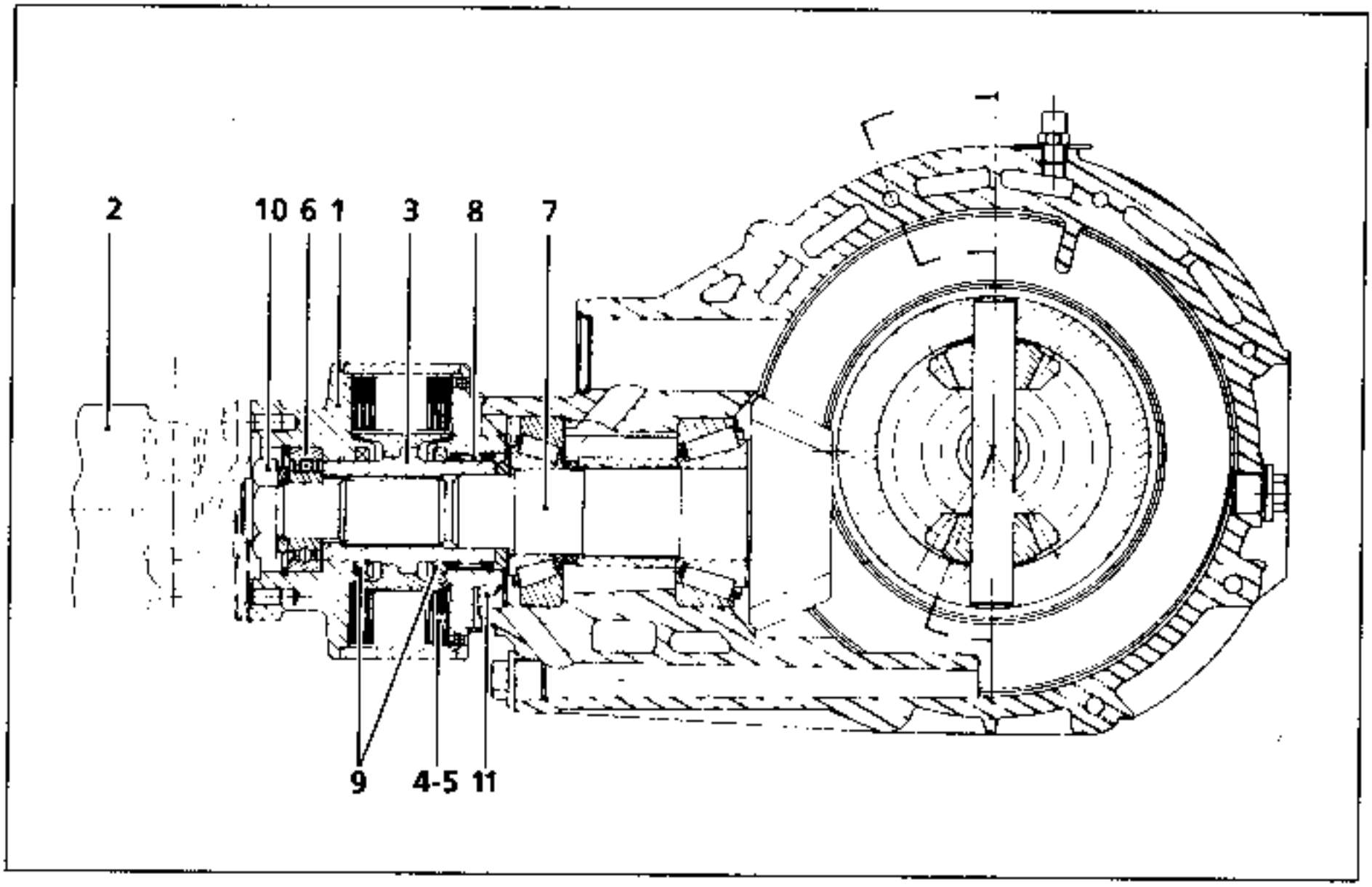


It consists of:

- An outer race (1) connected to the prop shaft (2).
- An internal disc carrier (3) connected to the final drive pinion.
- Two series of discs:
  - one series of discs (4) is connected to the outer race (outer splines);
  - one series of discs (5) is connected to the disc carrier (inner splines);

  The discs of the two series alternate ; they are slotted and drilled to create turbulent currents.
- Silicon oil in the space defined by the outer cage and the inner disc carrier and surrounding the disc; a bubble of air is left on refilling.

  THE OIL CANNOT BE TOPPED UP SUBSEQUENTLY.



- Two bearings:
  - a sealed ball bearing (6) located at the front between the outer race (1) and the final drive pinion shaft (7);
  - a needle bearing (8) lubricated by the rear axle oil and located at the rear between the outer race (1) and the inner disc carrier (3).
- Two inner seals (9) which both withstand high pressure and high temperatures.

COUPLING TO FINAL DRIVE PINION SHAFT

Crimped nut (10) ensures that final drive pinion shaft (7) is tight; the tightening torque defines the tapered bearing preload.

A seal (11) is fitted to the final drive (bears on outer race).

OPERATING PRINCIPLE

When the difference in rotational speed between the front and rear axles increases, ie. when the adhesion of one of the wheels decreases (for example if the drive wheels slip on starting, loss of grip as a result of the state of the road: sand, gravel, ice, snow), the visco coupling automatically transfers some of the engine torque to the axle with the greatest grip as follows:

The difference in speed between the sets of discs (one integral with the front axle and one integral with the rear axle) causes the silicon oil to heat and thus expand.

The result of this phenomenon is:

1. To increase the transmission of the shearing forces in the fluid hence the tendency to balance the rotational speed which transfers some of the torque to the axle with the greatest grip;

2. To move the discs closer to each other which accentuates the above phenomenon.

When the rotational speeds of the discs are balanced, the heating and expansion of the silicon oil decreases, which re-establishes the normal state of the visco coupling if the wheels on each of the axles grip to a uniform extent, ie. rotate at similar speeds. The visco coupling plays the role of a torque distributor between the two axles.

CRITICAL MODE

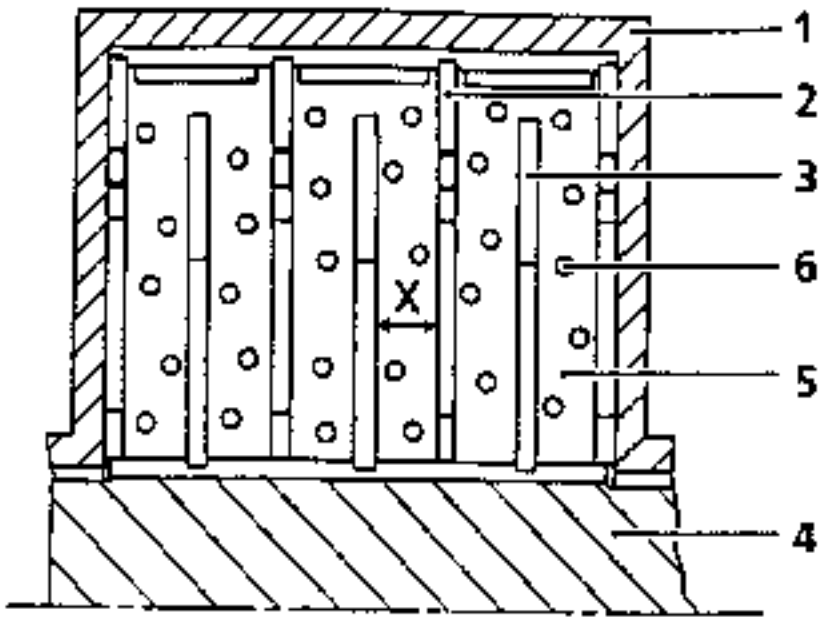
If there is a great difference in speed between the axles (for example wheel on one axle stuck in mud) and this occurs for a long time (several seconds), the silicon oil expands to a large extent, the amount of air it contains is compressed hence an increase in the internal pressure which may reach 120 bars, which causes the discs to stick to one another in the manner of a clutch: the visco coupling is blocked.

When the discs are attached, the shearing forces in the oil decrease and its temperature decreases hence a gradual return to normal if the wheels should once again have uniform grip.

This phenomenon has two advantages:

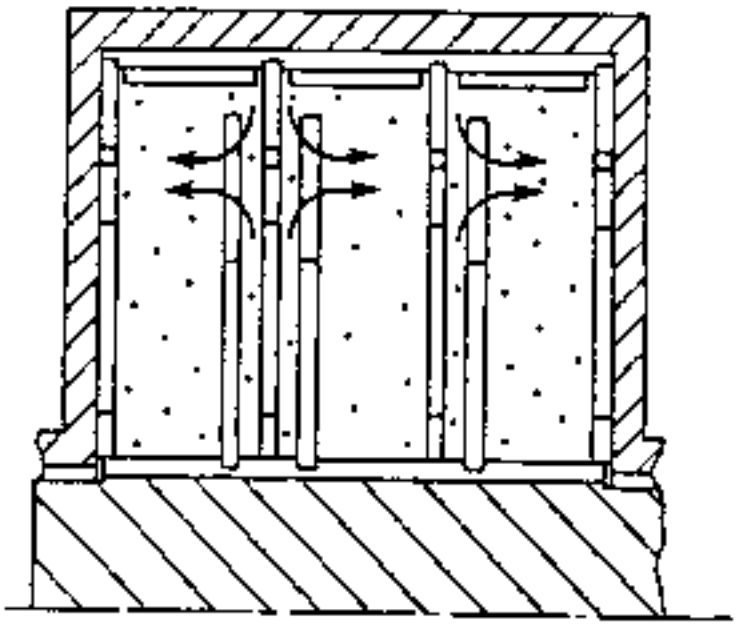
1. It enables maximum torque (up to 90%) to be transferred to the gripping wheels;

2. It temporarily protects the visco coupling by restricting the increase in oil temperature.

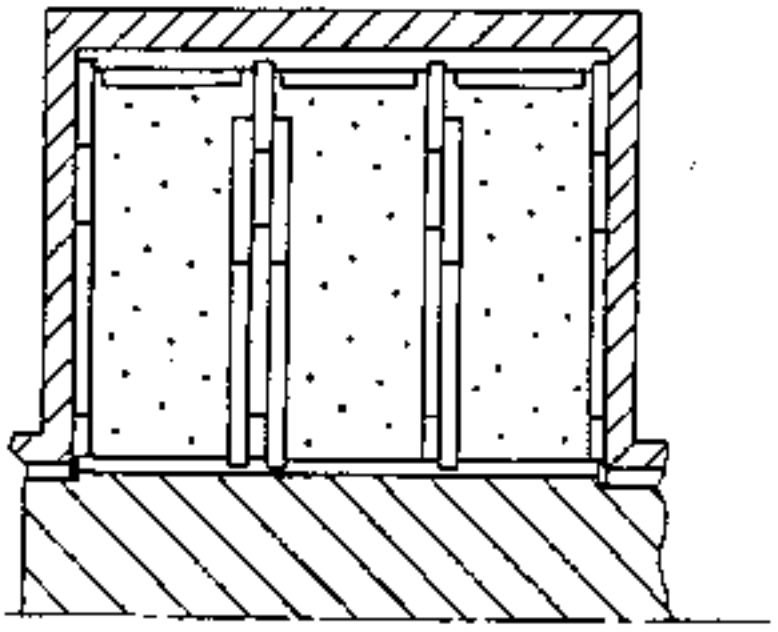


1 Outer race
2 Disc
3 Disc
4 Internal disc holder
5 Silicon oil
6 Air bubble
X Initial distance between discs

VISCO COUPLING IN REST POSITION



NORMAL OPERATION



CRITICAL MODE::DISC COUPLING

M10252

ESSENTIAL SPECIAL TOOLING	
T.Ar. 1140	36 mm socket

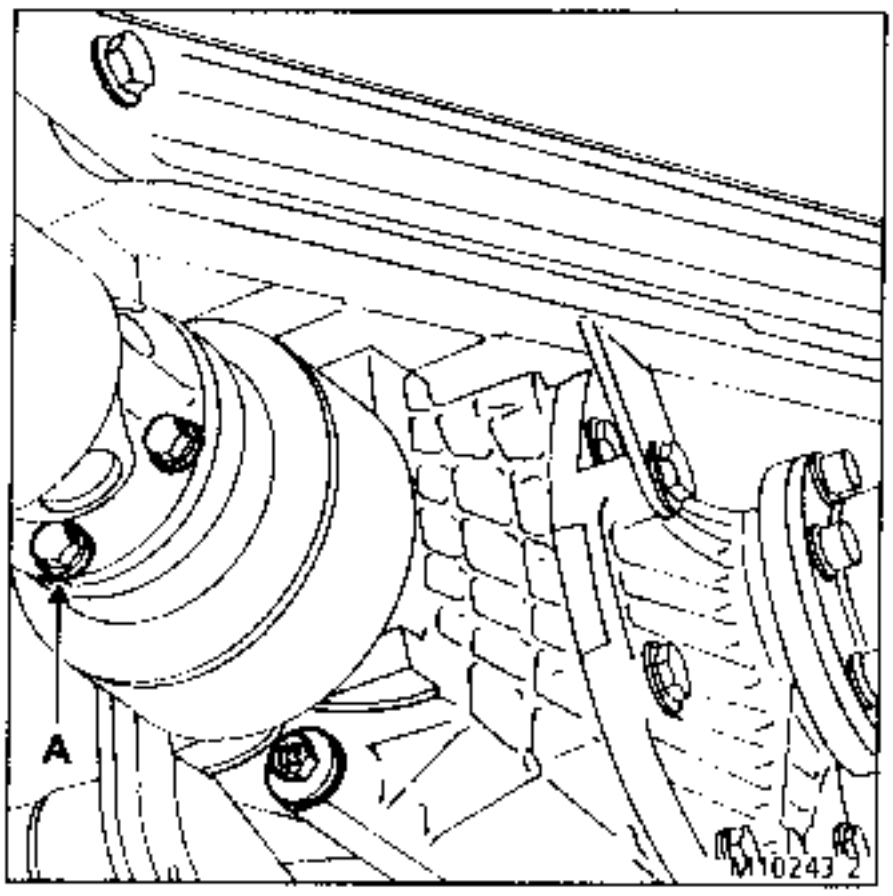
Special Points:

The visco coupling cannot be repaired. Only the front ball bearing can be replaced.

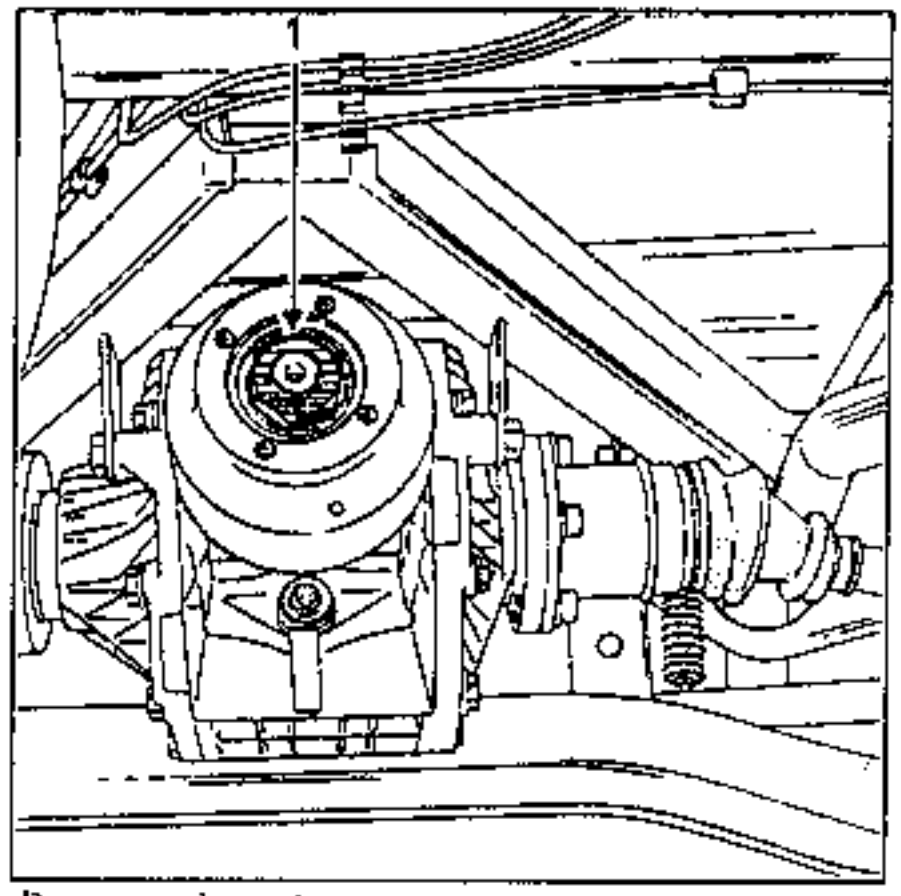
REMOVAL

Drain the rear axle.

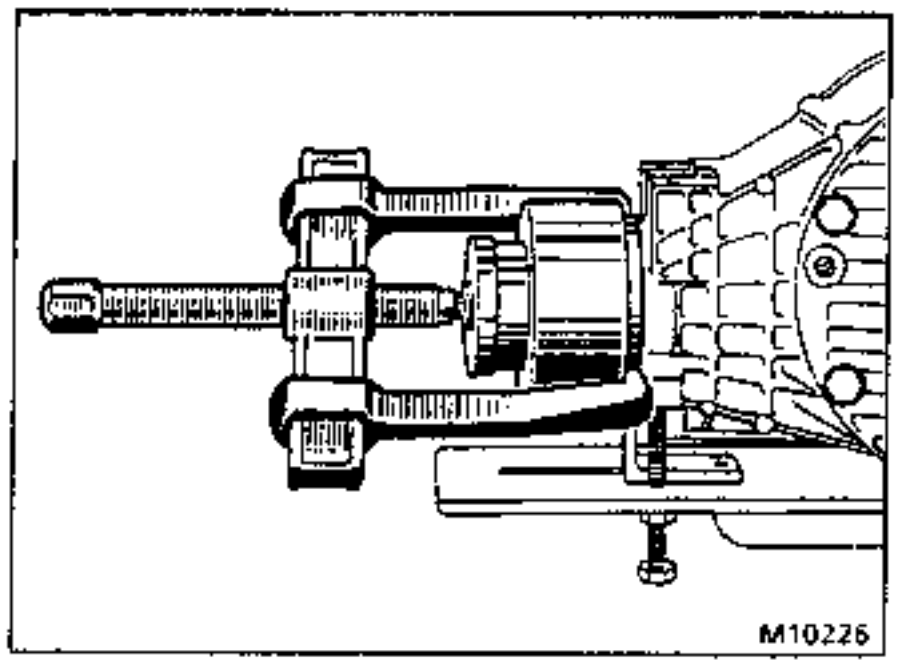
Remove:
- the four mounting bolts (A) from the prop shaft and take it out towards the rear;



- anti-dust seal (1);
- the visco coupling mounting nut using tool T.Ar.1140.



Remove the visco coupling with the extractor.



REFITTING

Proceed in the reverse order to removal.

Grease the seal and torque tighten the nut to 20 daNm.

Coat the bolts securing the shaft to the visco coupling using Loctite FRENBLOC and torque tighten.

Top up the rear axle with the recommended oil

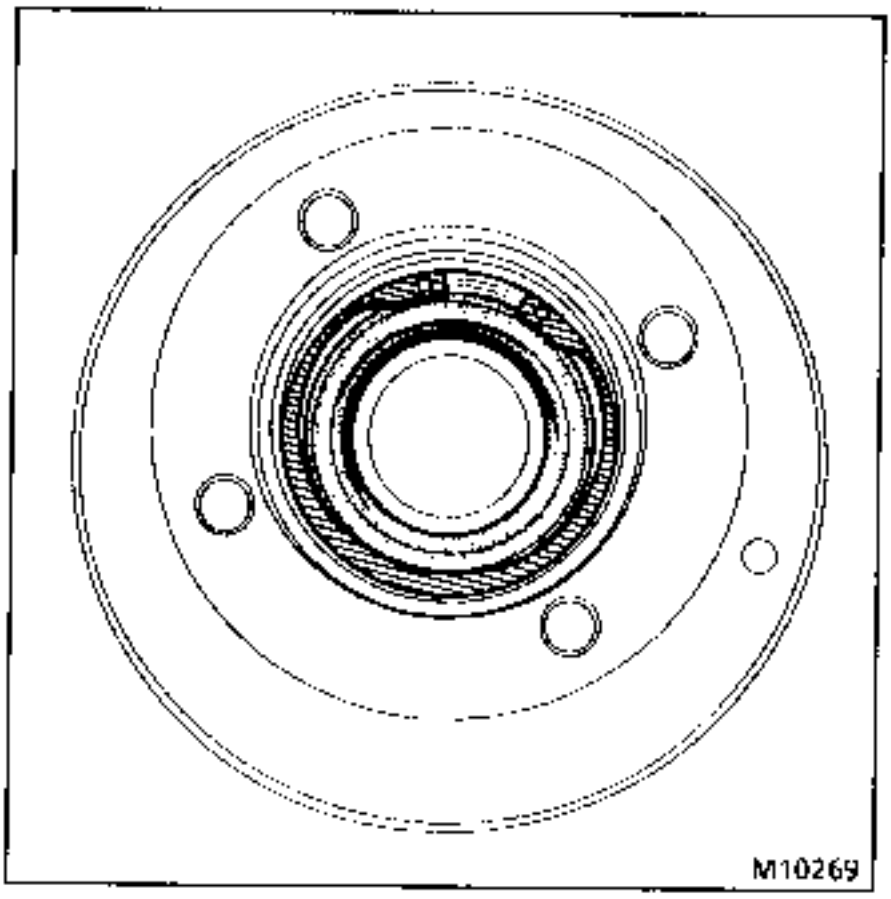
REPLACING THE BALL BEARING

ESSENTIAL SPECIAL TOOLING
Impact extractor

Remove the visco coupling.

Remove the circlip.

Take out the bearing using an impact extractor.



Fit the bearing on the press by pressing on the outer diameter using a socket.

Refit the circlip and visco coupling.

Type	Packaging	Part No	Units
MOLYKOTE BR2	1 kg tin	77 01 421 145	Splines at gearbox end Prop shaft splines
LOCTITE SCELBLOC (locking and sealing resin)	24 cc bottle	77 01 394 072	Stub axle splines Brake caliper bolts Drive shaft roll pins at gearbox end
LOCTITE FRENBLOC (locking and sealing resin)	24 cc bottle	77 01 394 071	
CAF 4/60 THIX0	100 g tube	77 01 404 452	
MOBIL CVJ 525 Black Star or MOBIL EXF 57C	180 g sachet	77 01 366 100	Lobro joint GI72 joint GI82 joint RC490 joint

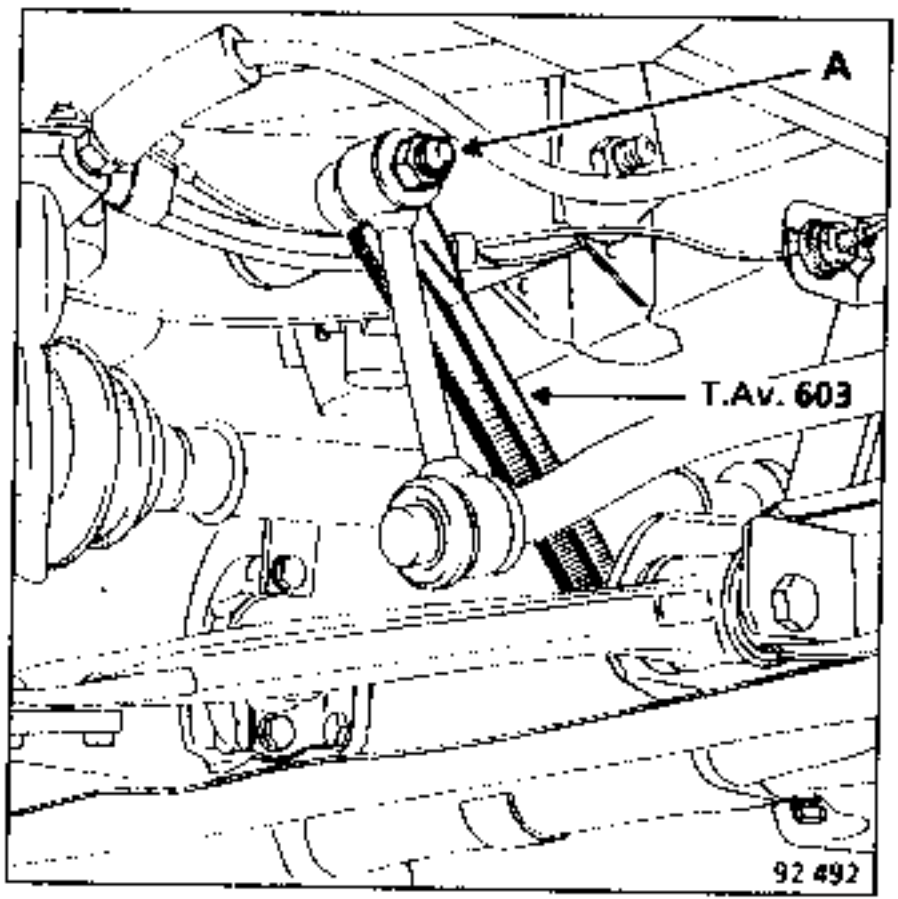
ESSENTIAL SPECIAL TOOLING	
B.Vi. 31-01 or **B.Vi. 606**	Set of drifts
T.Av. 476	Ball joint extractor
T.Av. 603	Retaining spacer
Rou. 604-01	Hub locking tool
T.Av. 1050	Drive shaft extractor

TIGHTENING TORQUES (In daNm)	
Wheel bolts:	
4 bolts	9
5 bolts	10
Drive shaft nuts	25
Upper ball joint nuts	6,5
Steering ball joint nuts	4
Brake caliper guide bolts	3,5
Shock absorber bottom shaft	8

REMOVAL

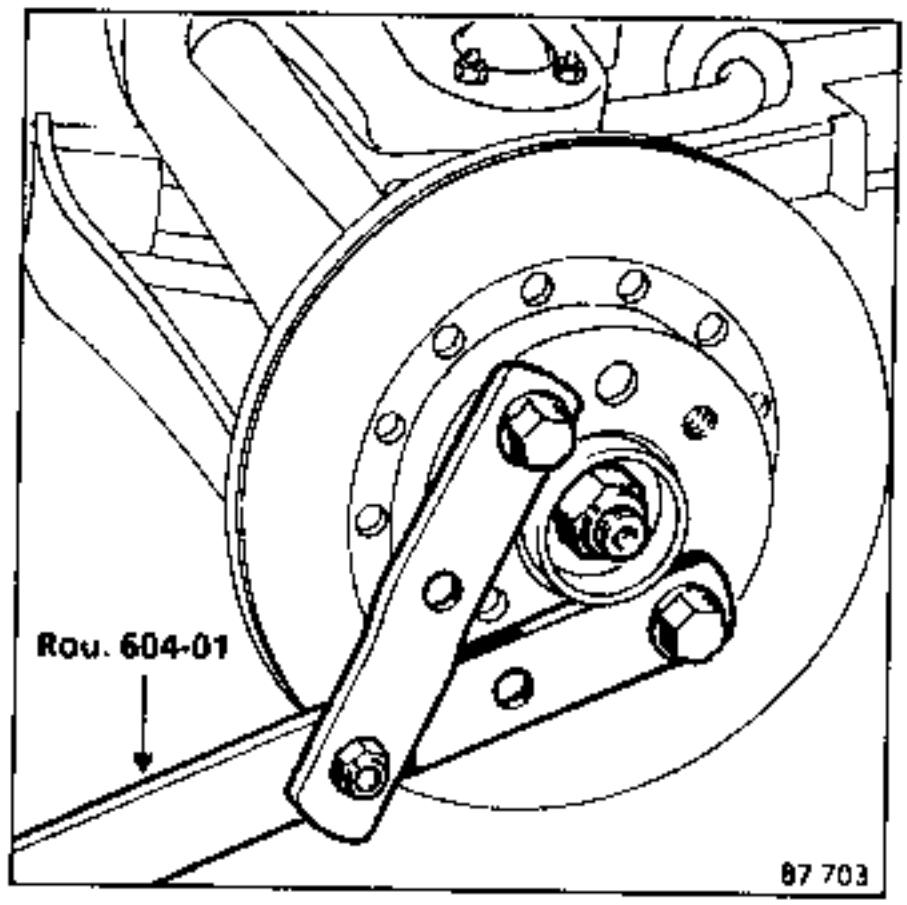
Compress the half-axle and fit spacers T.Av.603.

NOTE: if this is difficult, slacken shock absorber base shaft (A) and move away the anti roll bar link arm in order to fit spacer T.Av.603.

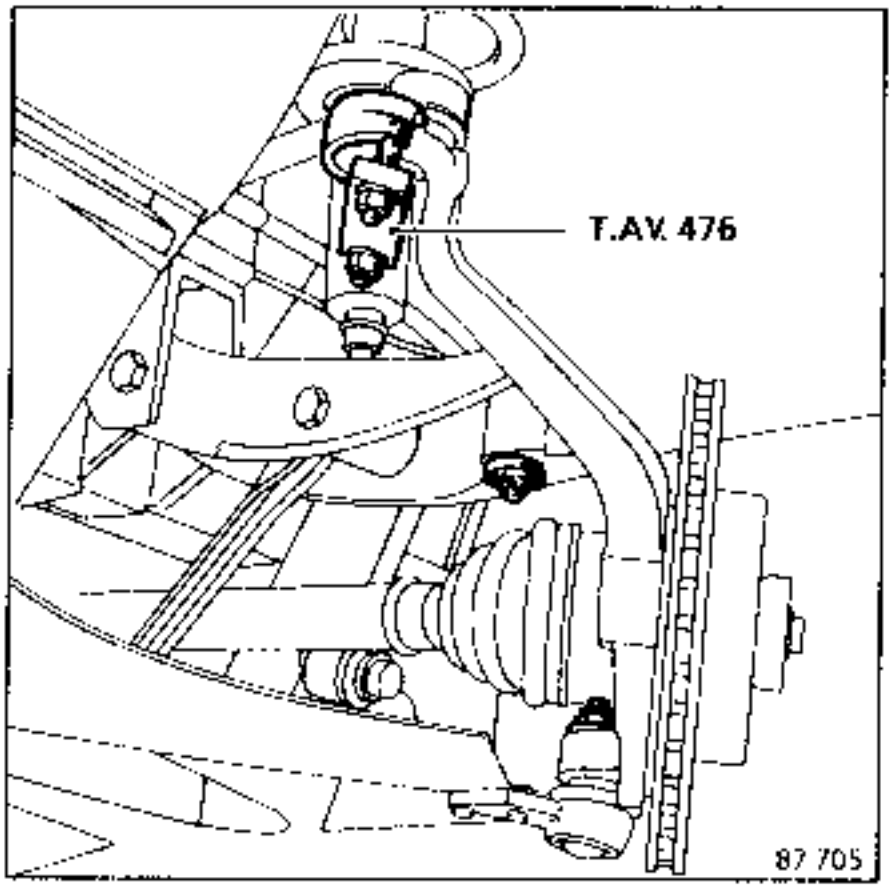


Remove:

- the brake caliper (see relevant section);
- the drive shaft nut using tool Rou.604-01.

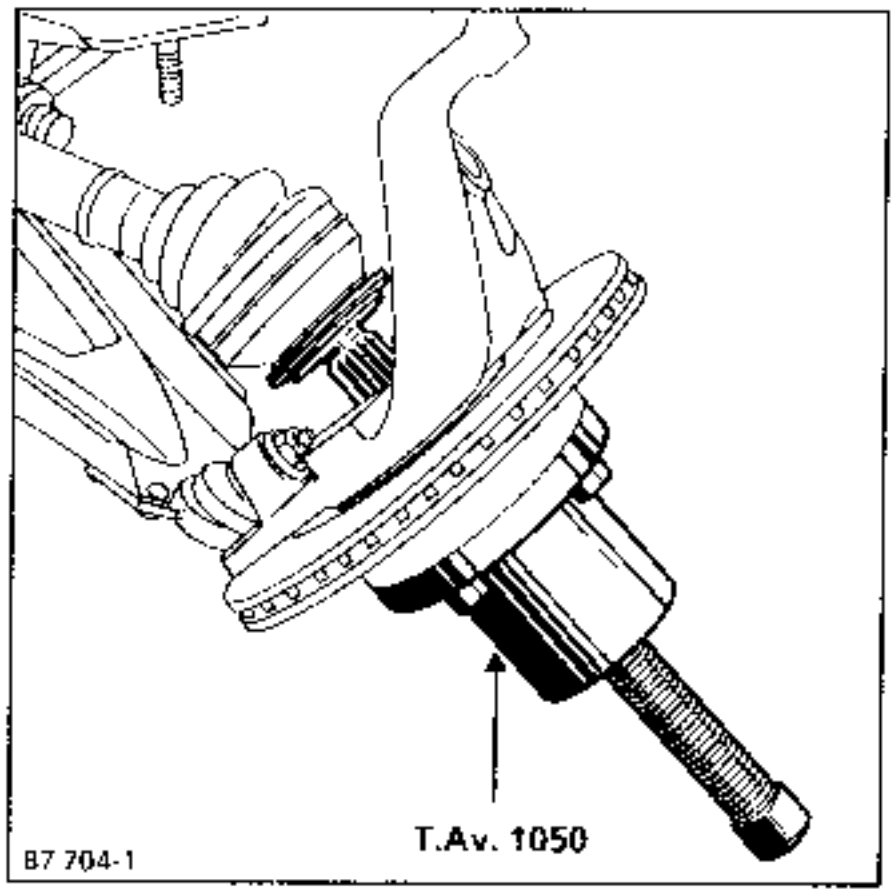


Unfasten the upper and steering ball joints using tool T.Av.476.

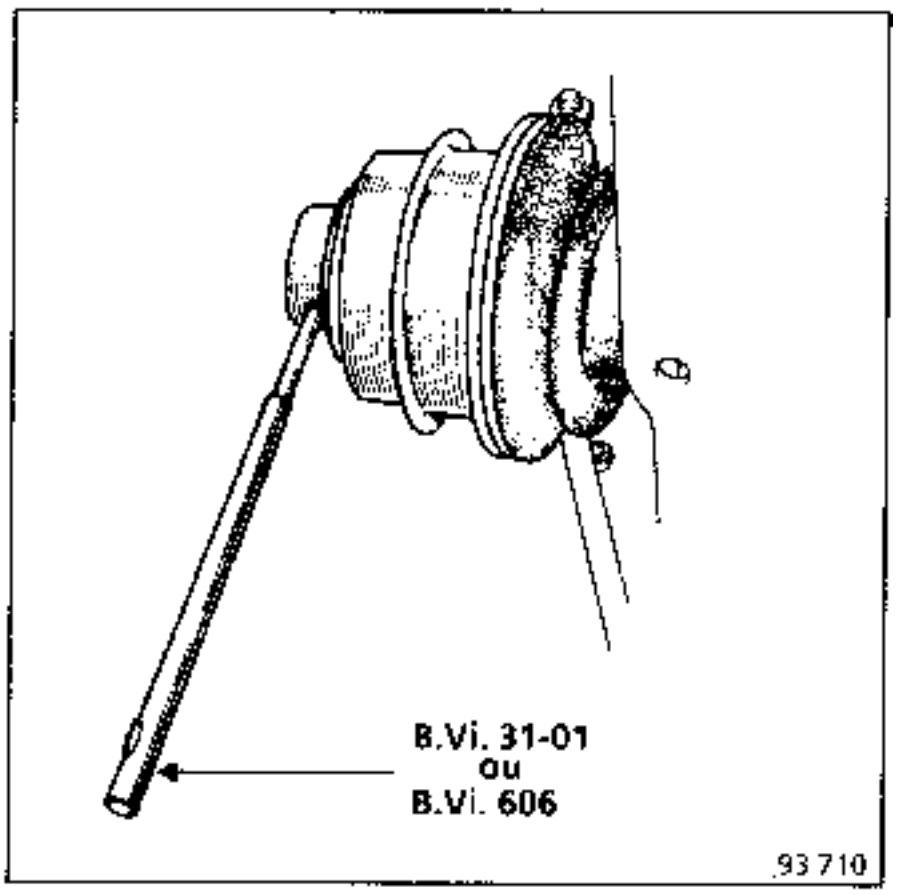


These vehicles are fitted with bonded drive shafts which must be pushed back using tool T.Av.1050.

Tilt the half-axle to free the stub-axle from the drive shaft.



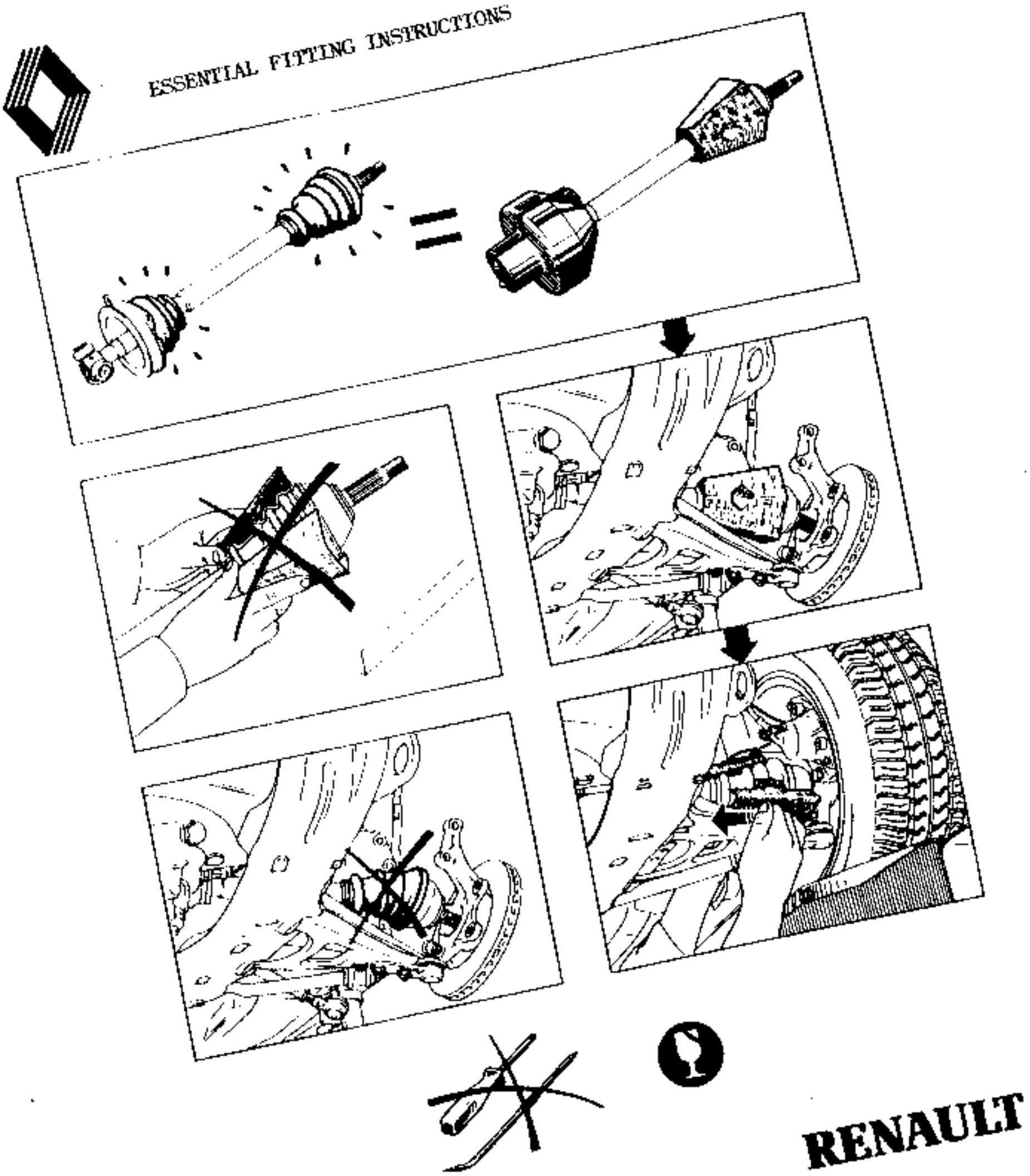
Knock out the pins at the gearbox end using tool B.Vi.31 01 or B.Vi.606.



Remove the drive shaft.

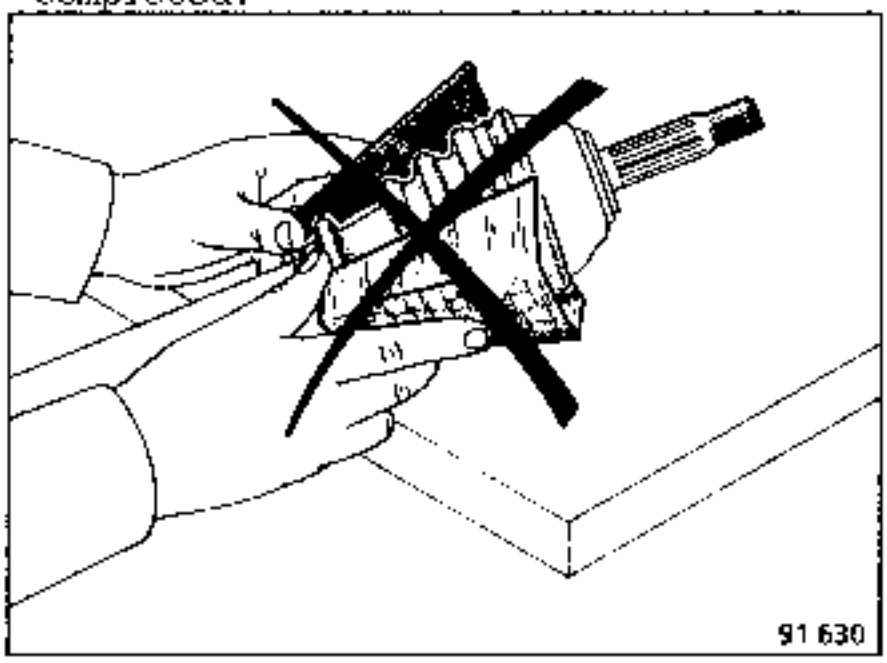
REFITTING

NOTE: from now onwards the Parts Dept supplies drive shafts equipped with the protector and provided with fitting instructions. These instructions must be followed in order to ensure that the drive shafts are fitted as well as possible since the slightest knock to the gaiters sooner or later causes the rubber to split and the drive shaft to be destroyed (see following page).

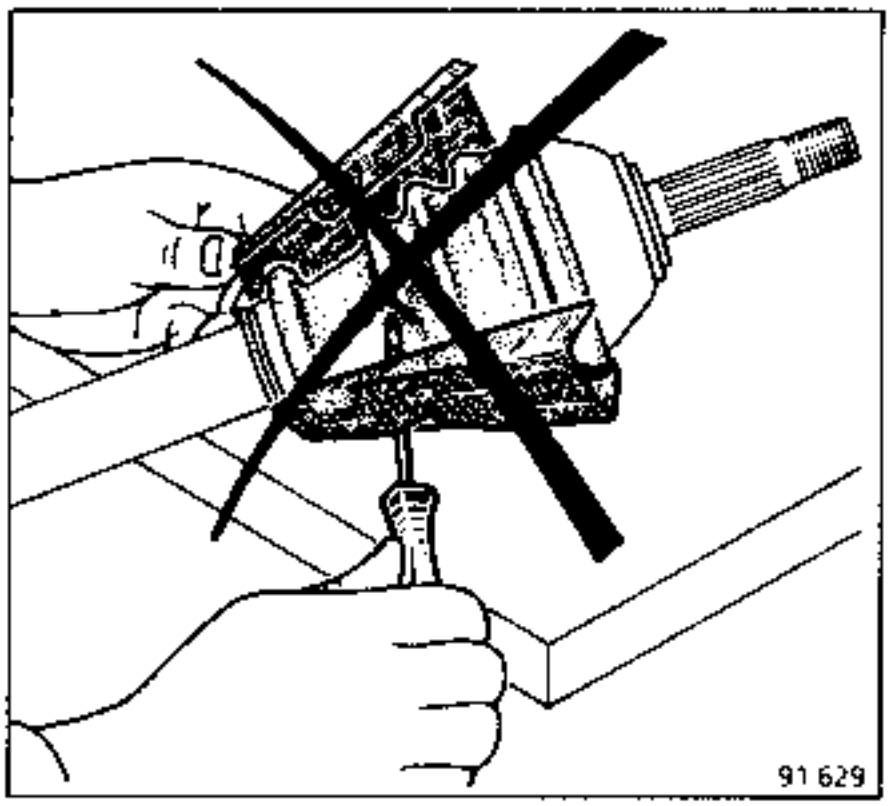


RENAULT

Never remove the cardboard protectors from the drive shaft before the operation for remounting the drive shaft on the vehicle has been completed.



Never use sharp objects which might damage the gaiter.



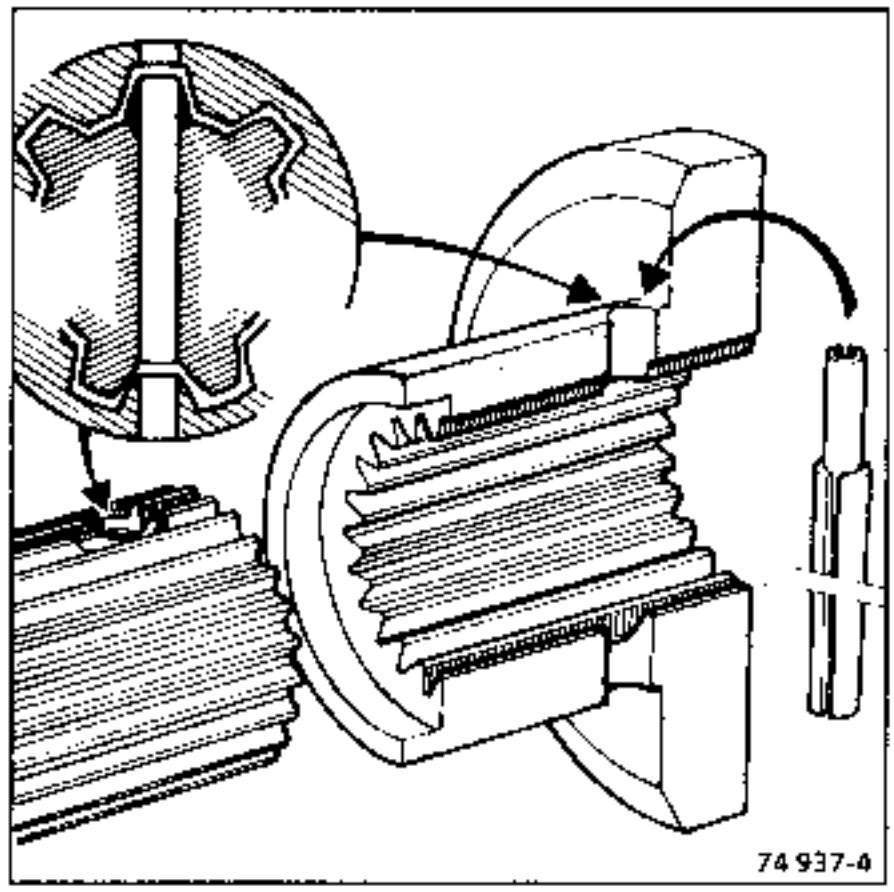
With the protector in place, coat the joint splines at the gearbox or automatic transmission end with MOLYKOTE BR2 grease.

Ensure that the rubber washer is fitted which must be inserted between the end of the sunwheel and the base of the drive shaft yoke.

Position the drive shaft in relation to the sunwheel and engage it.

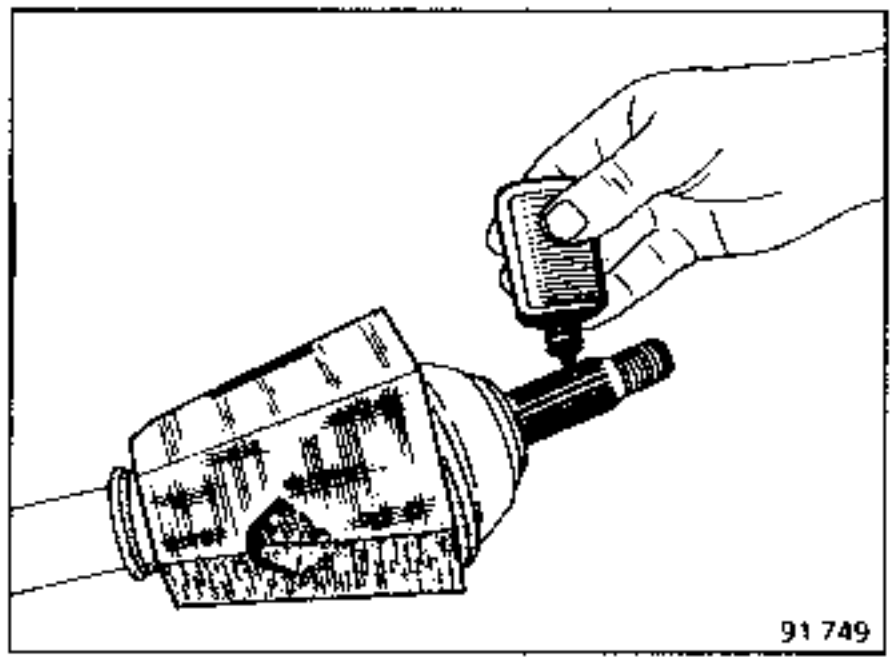
Check its position with the angled drift from set B.Vi.31-01.

Fit two new spring pins using tool B.Vi.31-01. Seal the pin locating holes with CAF 4/60 THIXO paste.



An insert chamfer on the sunwheel makes it easier to fit the new spring pins.

Coat the splines of the stub axle with Loctite SCELBLOC.



Engage the drive shaft stub axle in the hub.

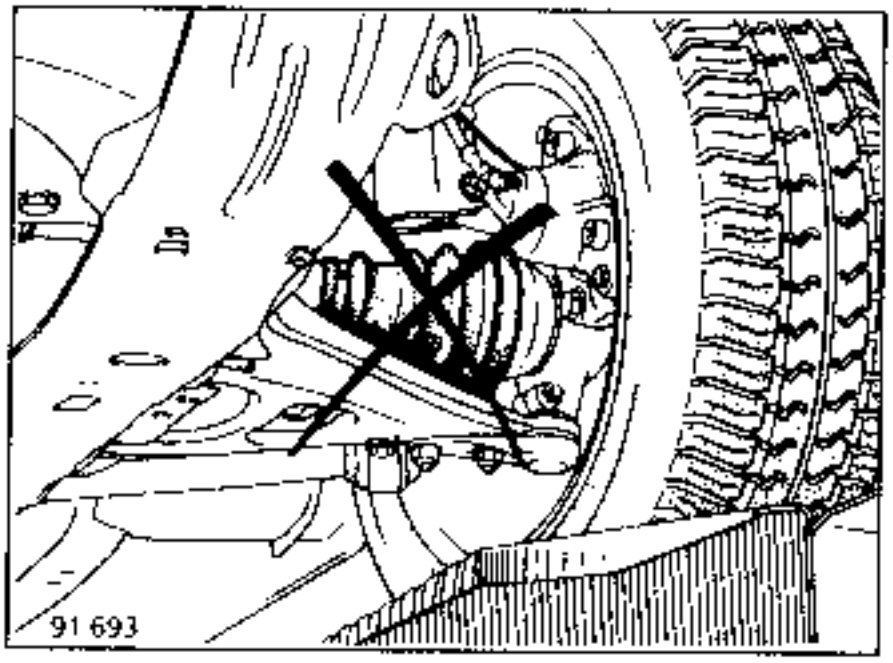
It should enter freely until the threads protrude by an amount enabling the washer and stub axle nut to be fitted.

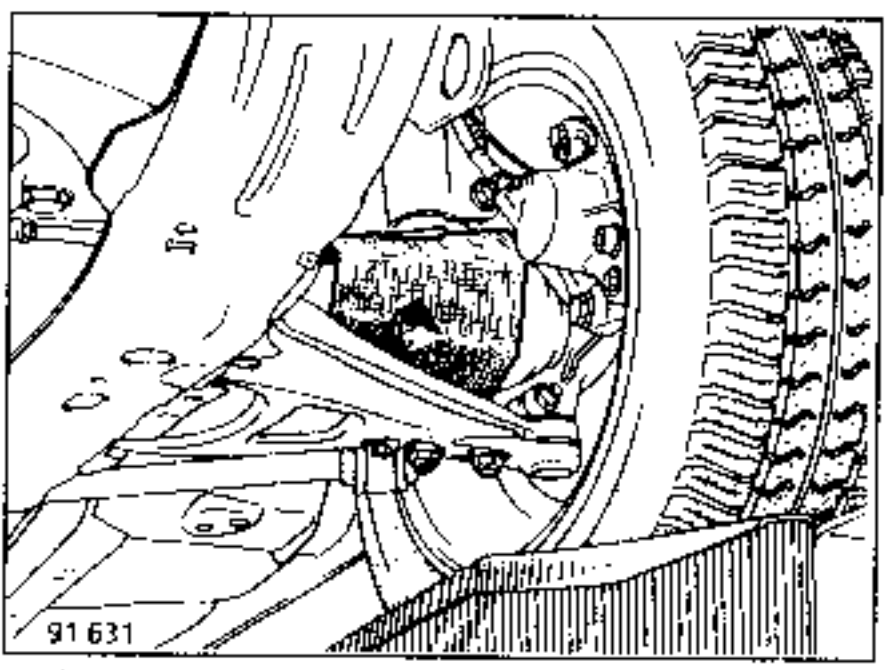
Reconnect the upper ball joint and steering link ball joint and torque tighten the nuts.

Fit in place the brake calipers, coat the bolts with Loctite FRENBLOC and torque tighten.

Torque tighten the drive shaft nut using (*) Rou.604-01.

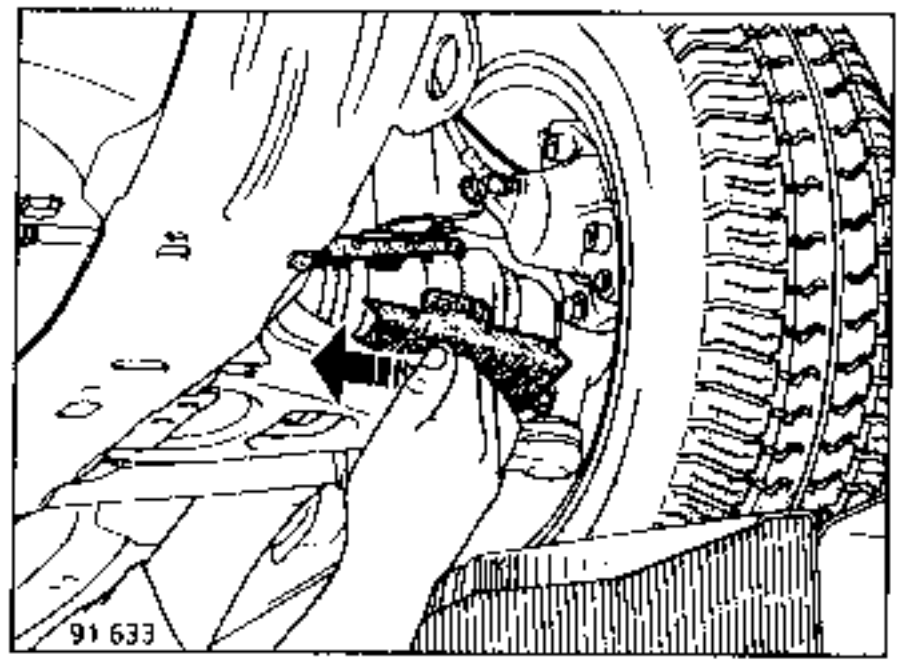
Place the vehicle on its wheels.



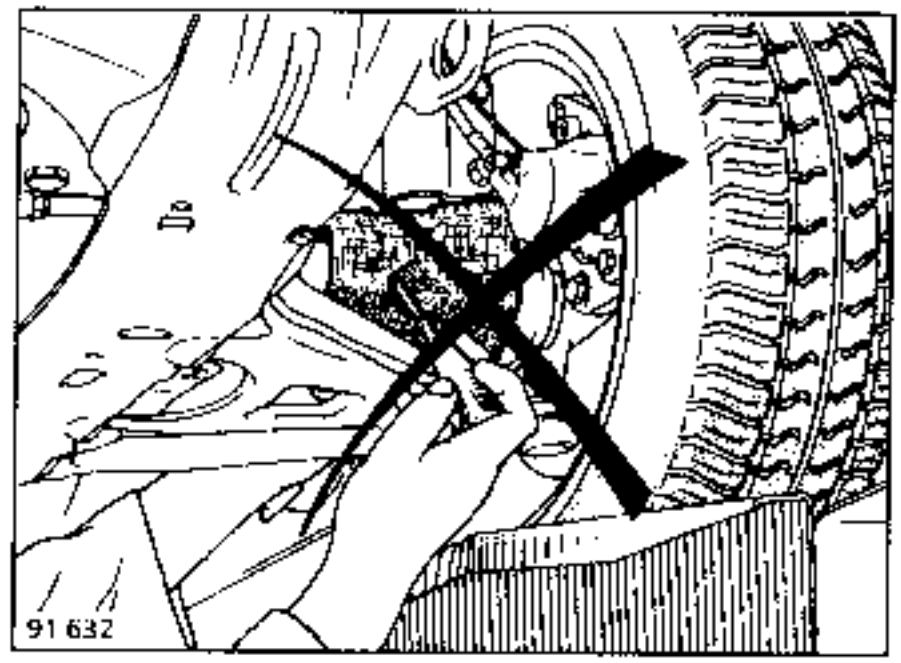


Remove tool T.Av.603 and retighten the shock absorber base shaft as necessary.

With the vehicle on its wheels, remove the cardboard protectors by tearing them as shown in the drawing.



Under no circumstances should a sharp object be used as it could damage the gaiter.



Press down on the brake pedal several times in order to bring the piston into contact with the linings.

NOTE: on vehicles equipped with the 6X gearbox, top up the oil if any has run out.

REPLACING

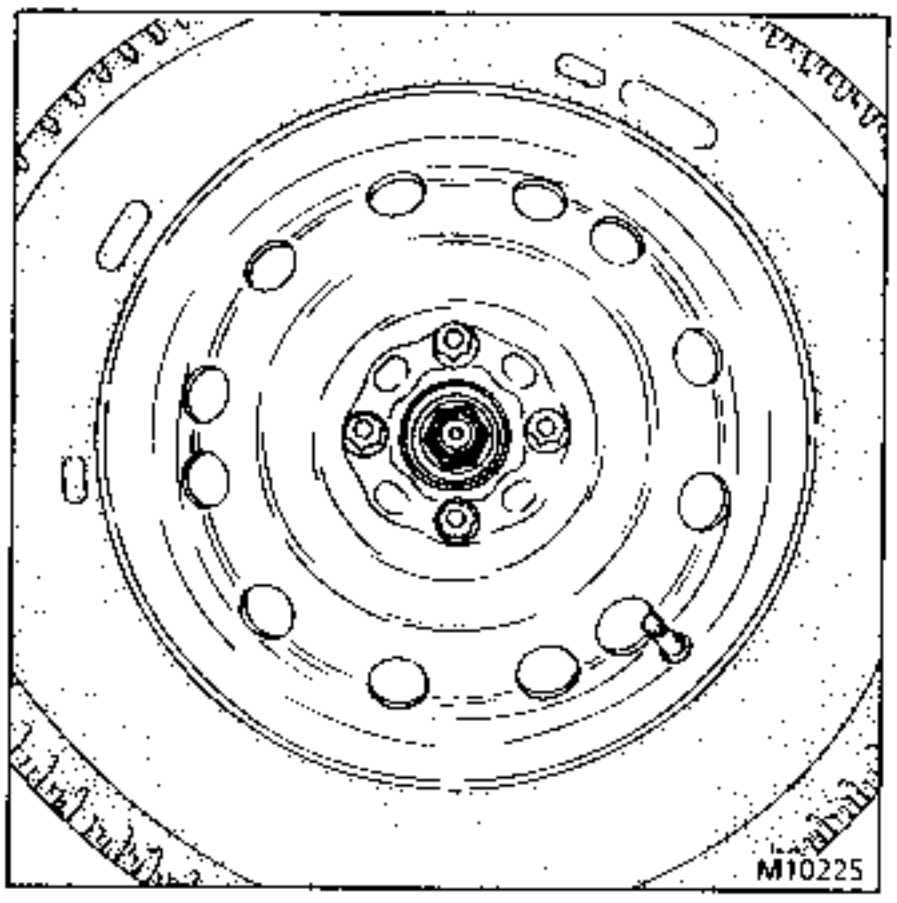
TIGHTENING TORQUES (in daNm)	
Drive shaft nuts	21
Sunwheel mounting bolts	6
Wheel bolts	9

Rear transverse drive shafts

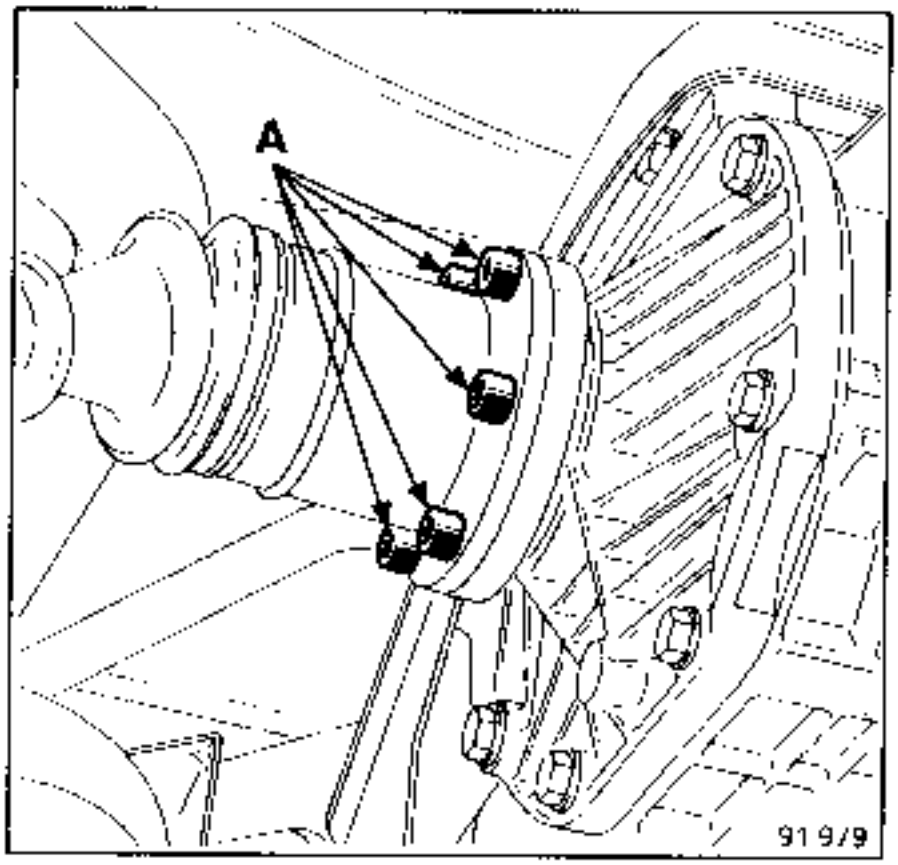
The lefthand and righthand drive shaft are the same: they have two three-roller homokinetic joints of the GI72 type.

REMOVAL

Remove:
- the road wheel embellisher;
- the drive shaft nut;



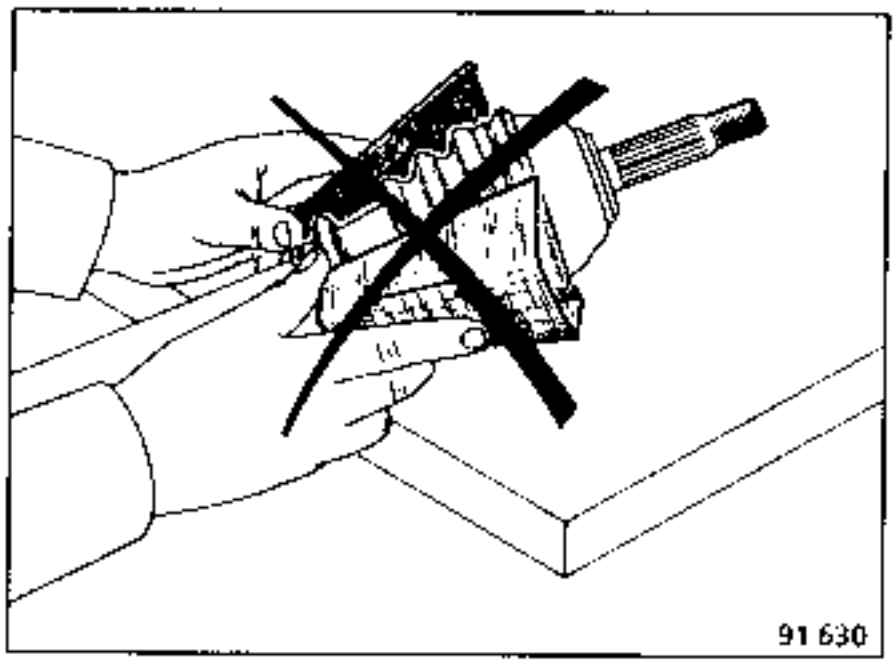
- the six mounting bolts (A) from the sunwheel.



REFITTING

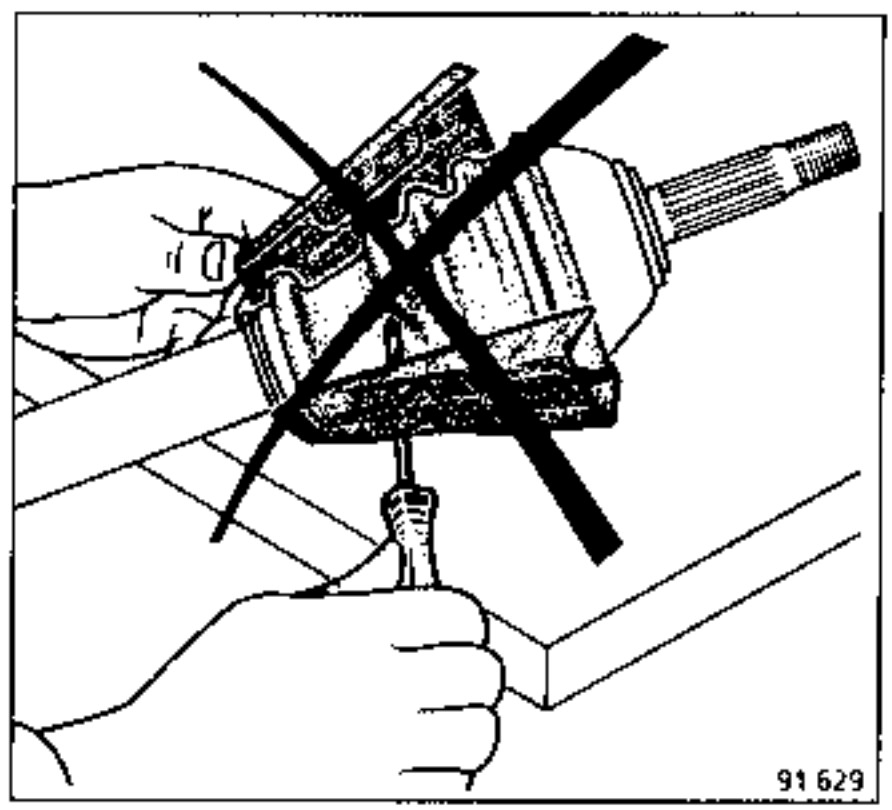
NOTE: from now onwards the Parts Dept. supplies drive shafts equipped with the protector and provided with fitting instructions. These instructions must be followed in order to ensure that the drive shafts are fitted as well as possible since the slightest knock to the gaiters sooner or later causes the rubber to split and the drive shaft to be destroyed .

Never remove the cardboard protectors

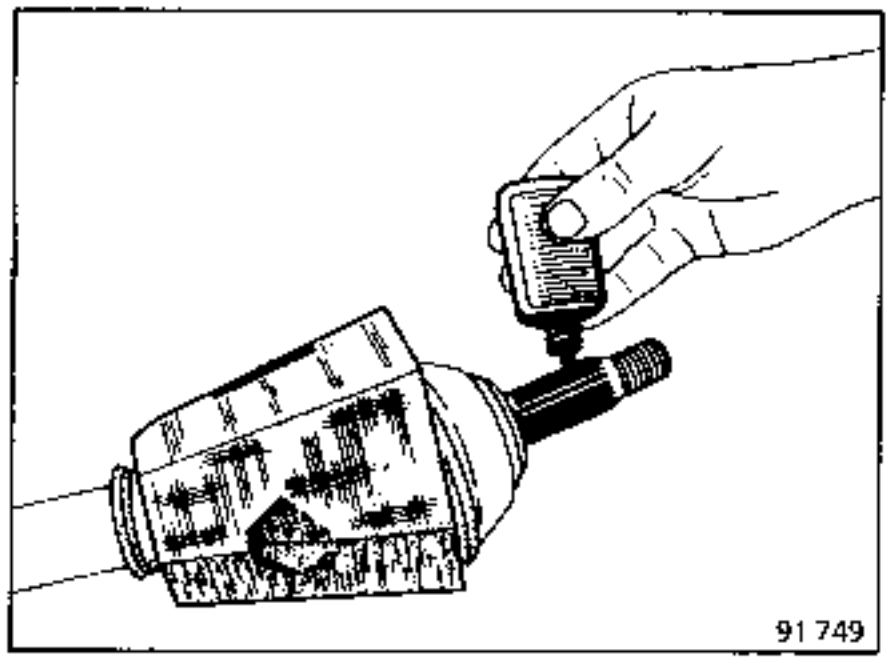


from the drive shafts before the operation for remounting the drive shaft on the vehicle has been completed.

Never use a sharp object which might damage the gaiter.



Coat the stub axle splines with Loctite SCELBLOC.



Engage the drive shaft stub axle in the hub.

Secure the drive shaft on the sunwheel (six bolts A) and torque tighten using tool Rou.604-01.

With the vehicle on its wheels, remove the cardboard protectors.

REPLACING

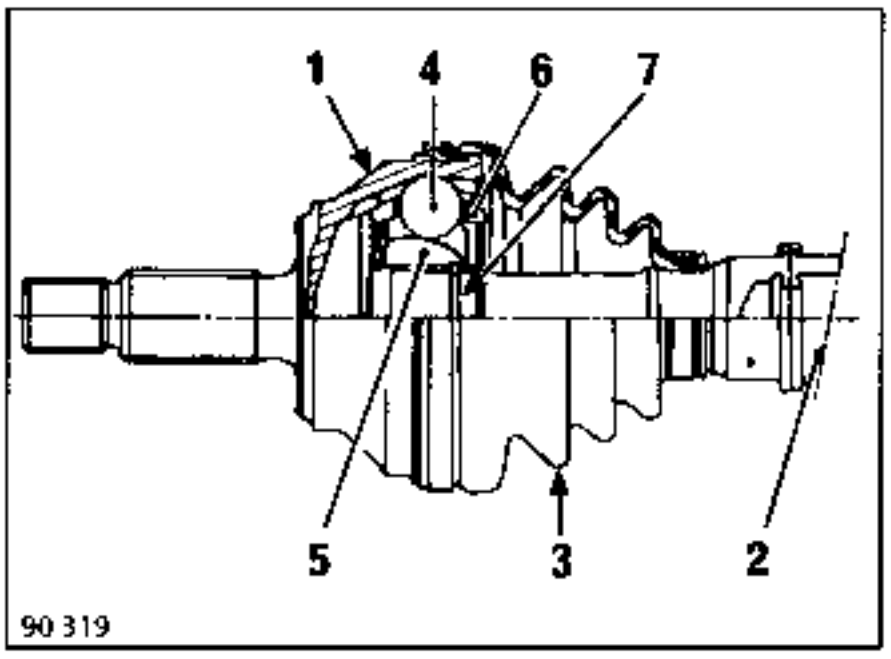
The drive shafts on these vehicles have a 6-ball joint at the wheel end.

The following operations can be carried out on the drive shaft, at the wheel end:

- replacing the joint;
- replacing the gaiter.

6-BALL JOINT AT THE WHEEL END

1 - Stub axle casing
2 - Drive shaft
3 - Rubber gaiter
4 - Balls
5 - Ball carrier hub
6 - Ball cage
7 - Retaining ring



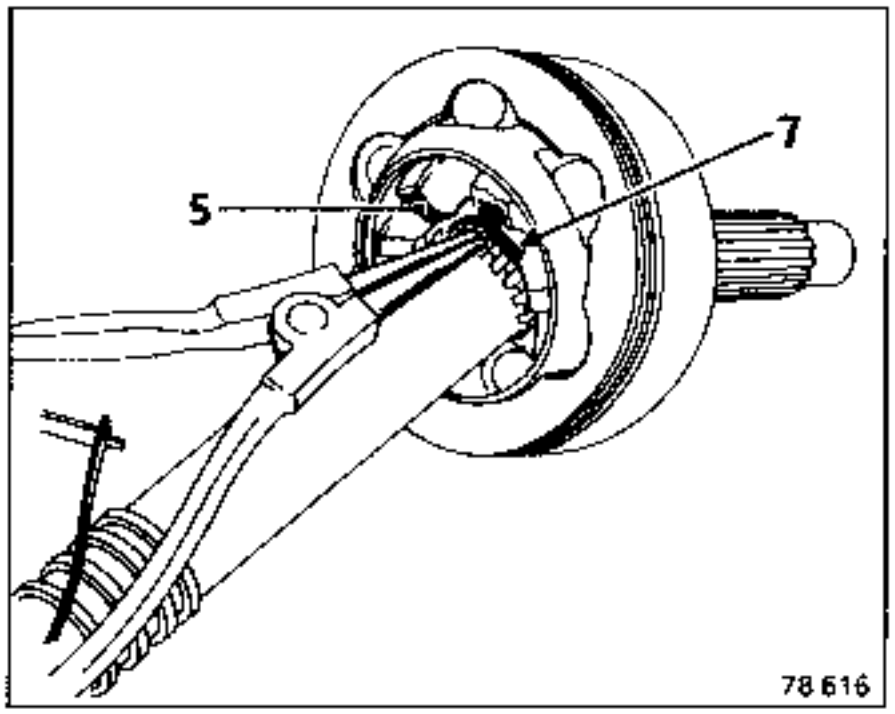
DISMANTLING

Cut the clip and the gaiter over its entire length.

Remove as much grease as possible.

Spread retaining ring (7) and at the same time strike the front of the ball carrier hub (5) a few times with a mallet.

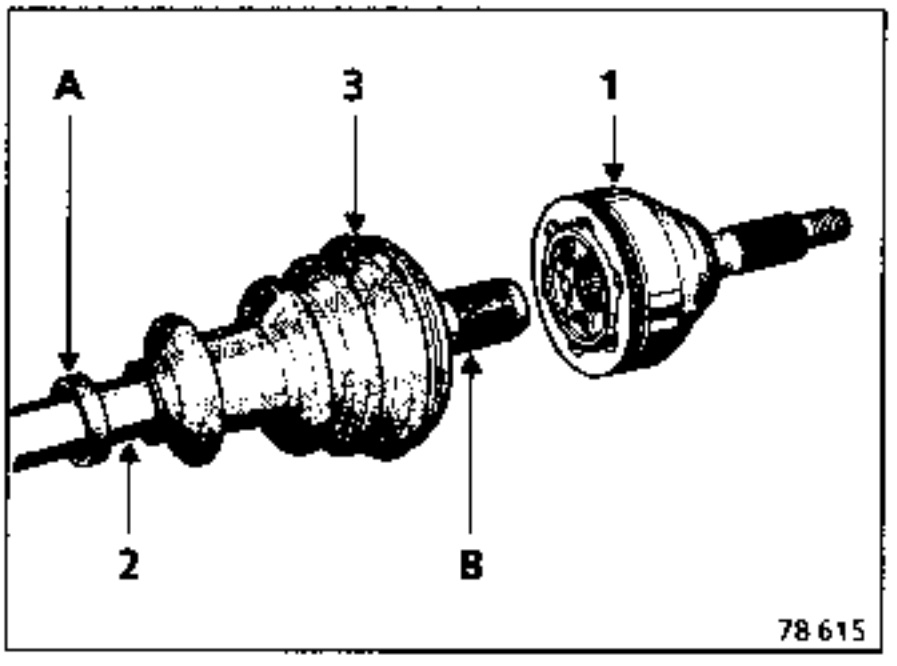
In this way the joint is separated from the shaft.



REASSEMBLY

Engage the following on the shaft:
- rubber ring (A);
- gaiter (3).

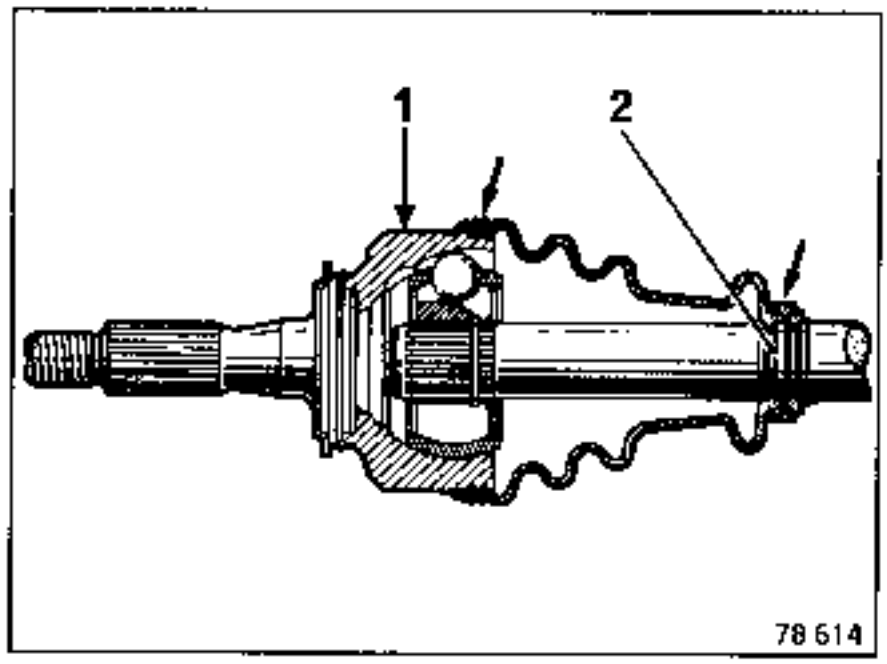
Fit the ball type joint (1) together with its retaining ring to the splines on the shaft, pushing them in until the ring enters groove (B) on the shaft.



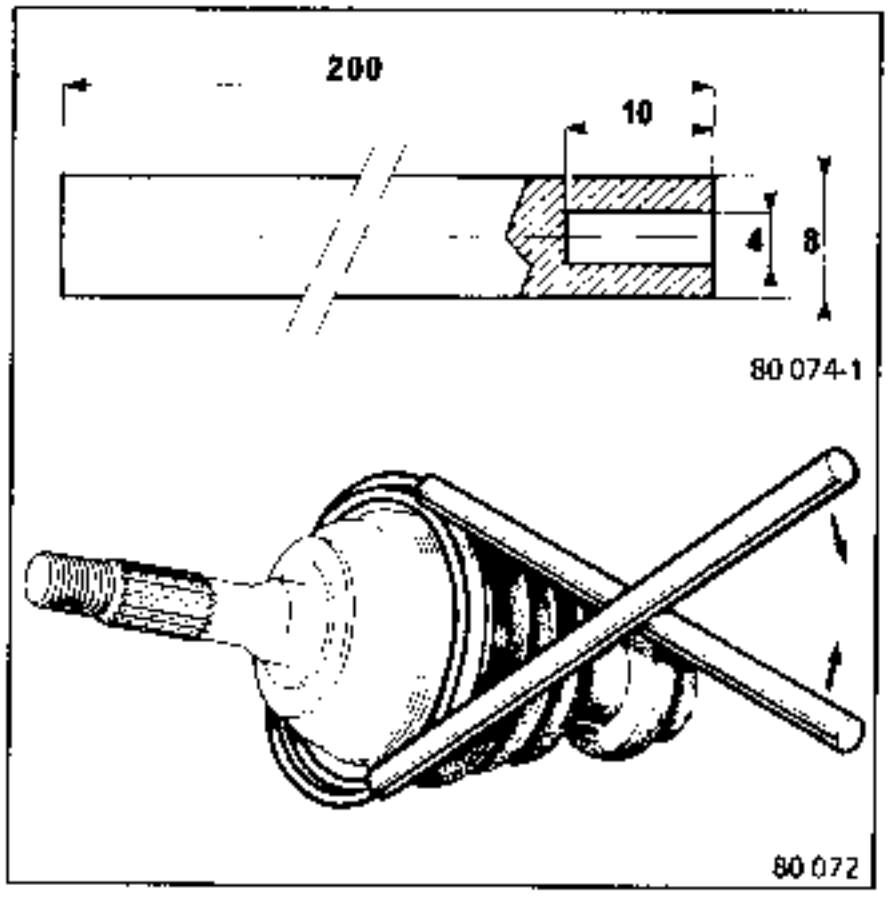
Spread the measured quantity of grease around the gaiter.

NOTE: It is essential to use the amount of grease specified in the list of materials.

Place the lips on the gaiter in the grooves in casing (1) and drive shaft (2).

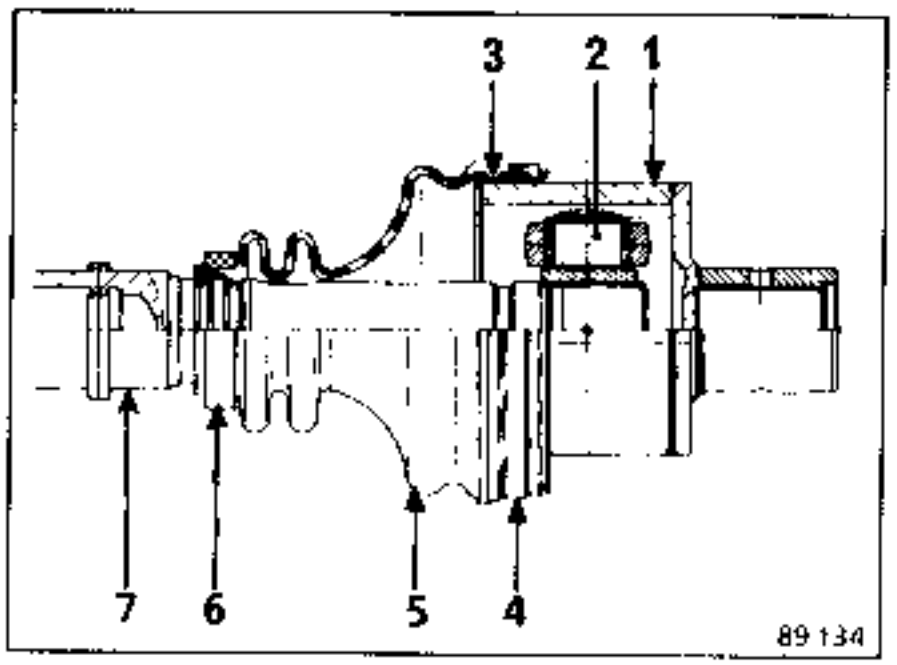


Fit the retaining clips to the gaiter using two rods which are to be made up locally (to the dimensions shown in the drawing).



ESSENTIAL SPECIAL TOOLING	
T.Av. 1034	Drive shaft clip crimping pliers

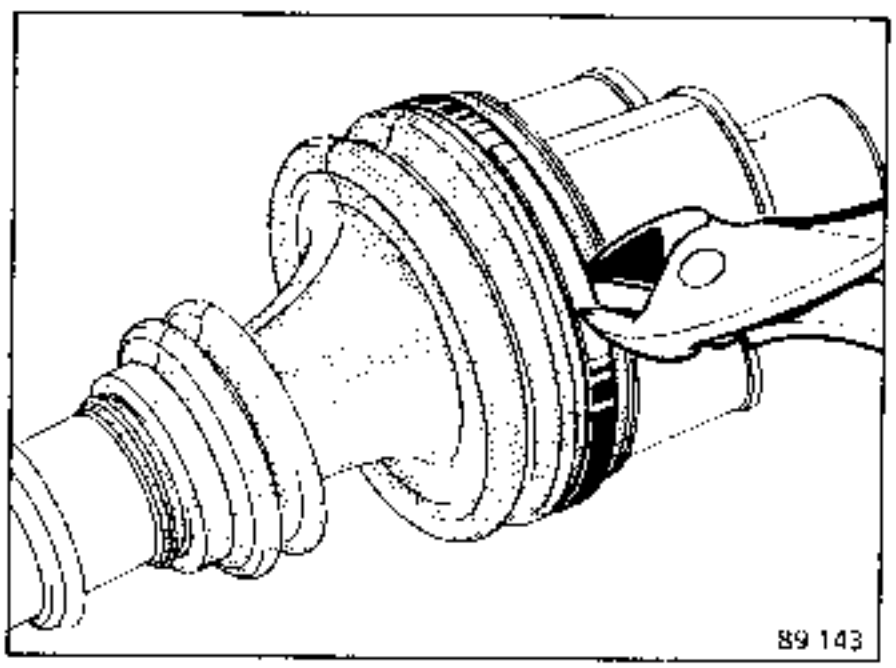
REPLACING



1 Yoke
2 Spider
3 Metal casing
4 Retaining clip
5 Rubber gaiter
6 Retaining ring
7 Drive shaft

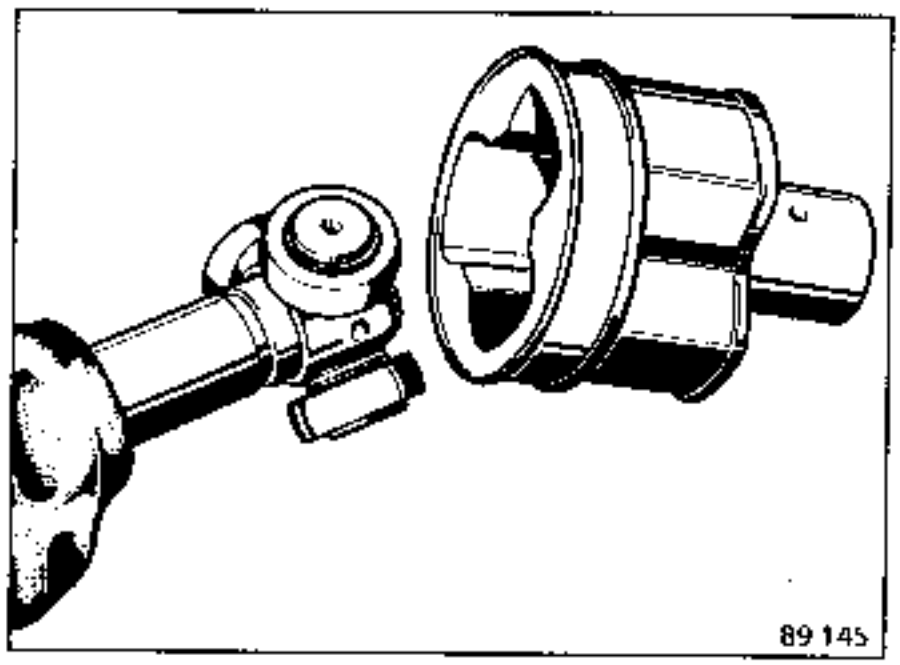
DISMANTLING

Cut:
- the existing clip taking care not to damage the metal casing;
- the gaiter over its entire length.



Remove as much grease as possible.

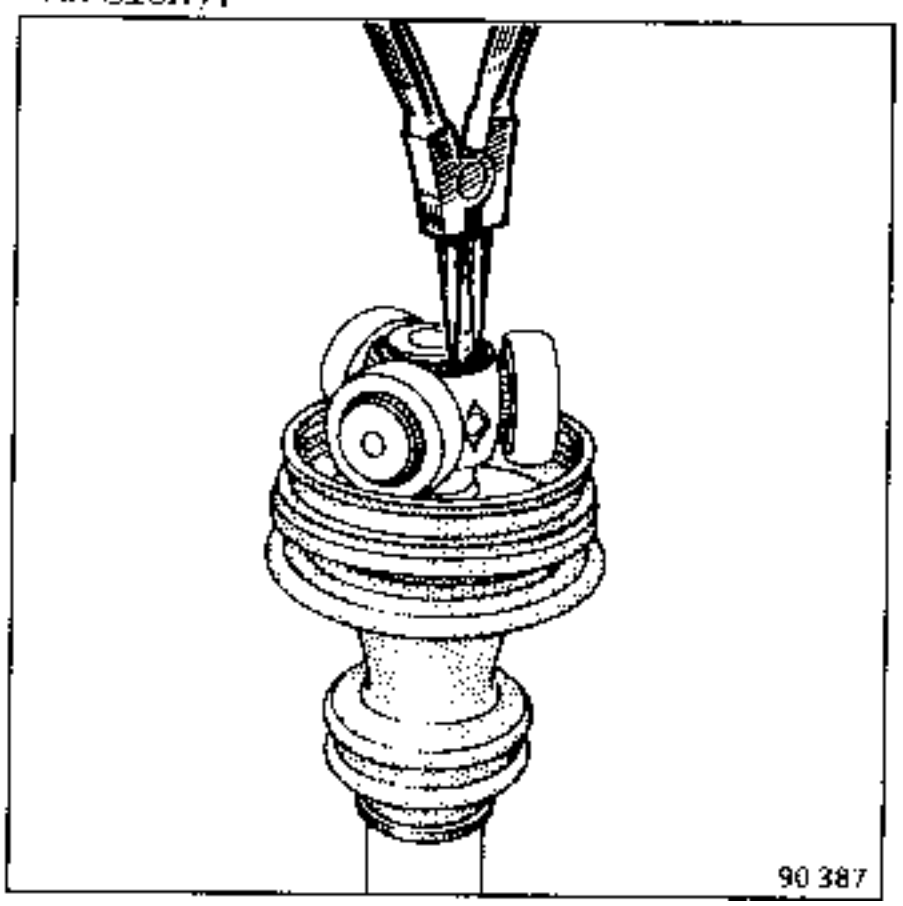
Remove the yoke.



NOTE: as the yoke does not have a lock tab , do not force it when removing.

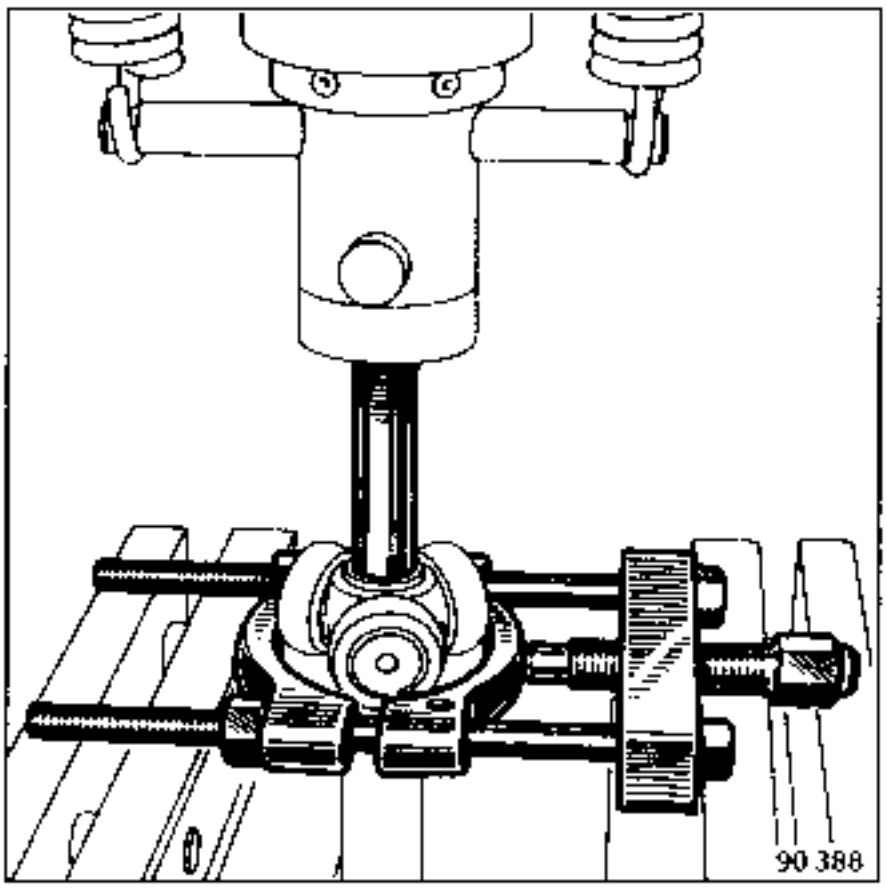
Do not remove the rollers from their respect trunnions, as the rollers and trunnions are matched and must never be mixed with one another.

Remove the circlip (depending on version).



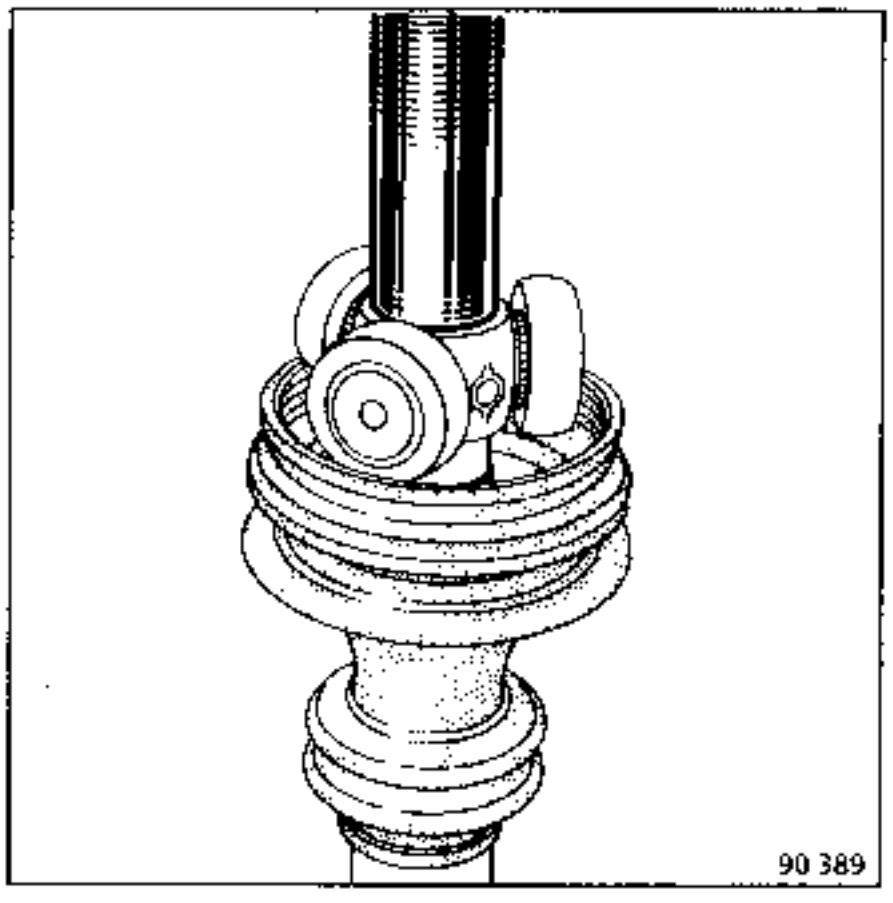
Never use thinners for cleaning the component parts.

On the press, take out the spider taking the weight on a stripping extractor of the FACOM U53G type.



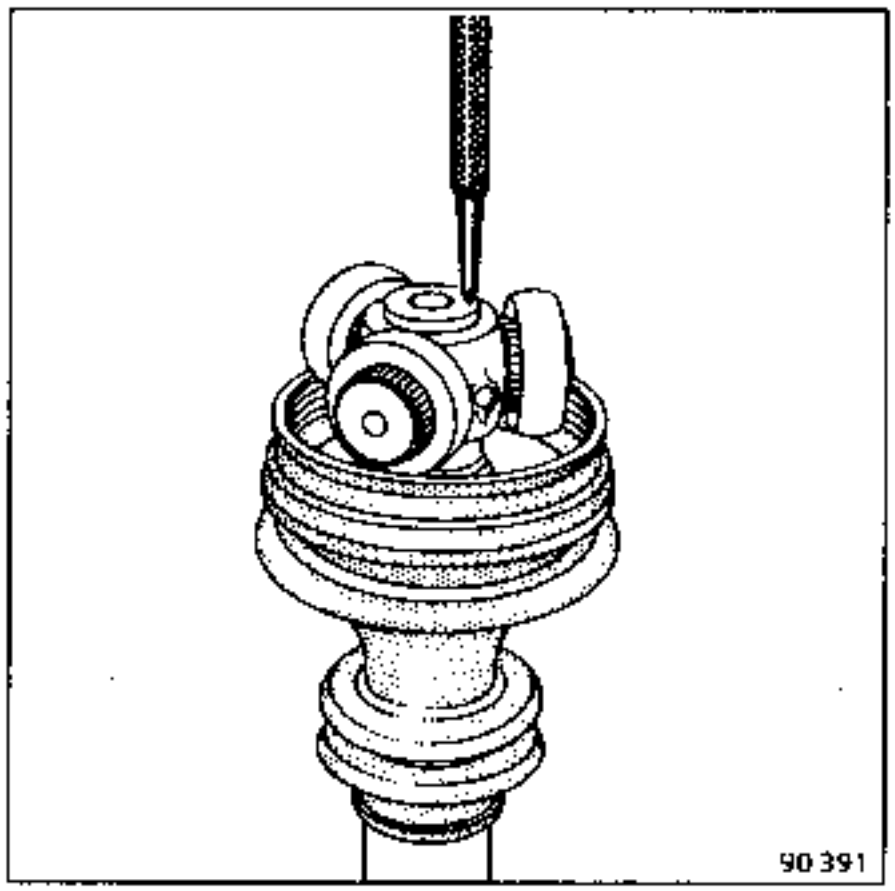
REASSEMBLY

Lubricate the drive shaft and slide the new retaining ring and gaiter in place.



Fit the spider on the splined shaft.

Refit the retaining circlip or pean the metal of the splines onto the drive shaft at points 120° apart.



Lubricate the yoke and engage it on the spider.

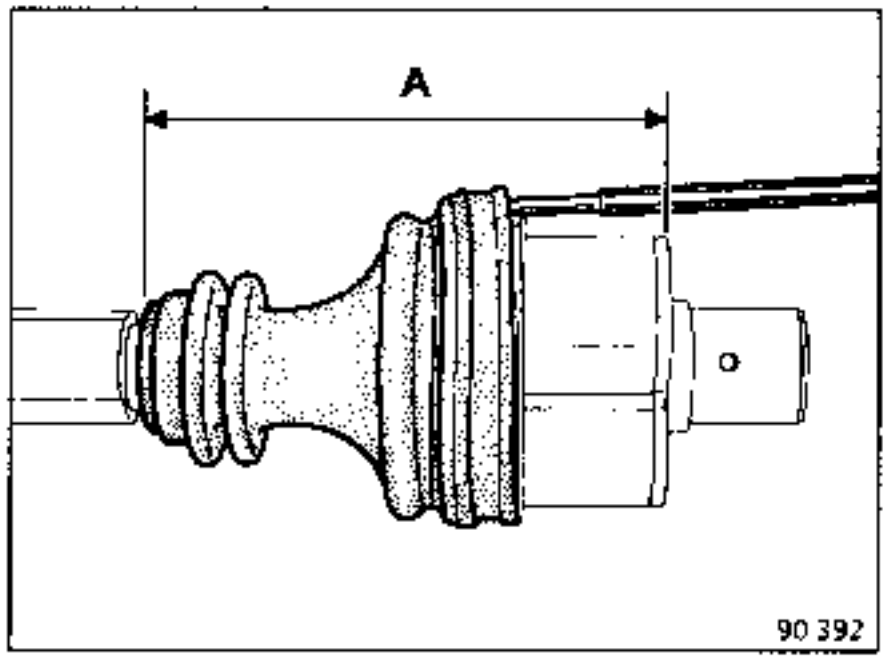
Spread all the grease from the sachet inside the gaiter and yoke.

NOTE: It is essential to use the amount of grease specified in the consumables table.

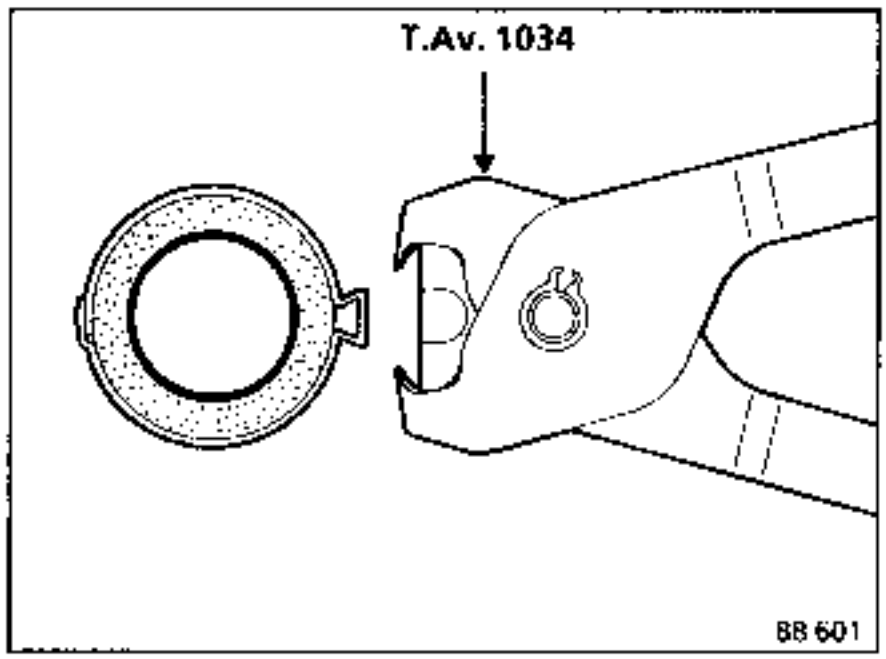
Insert a smooth rod with rounded ends between the gaiter and the casing to determine the amount of air remaining in the joint.

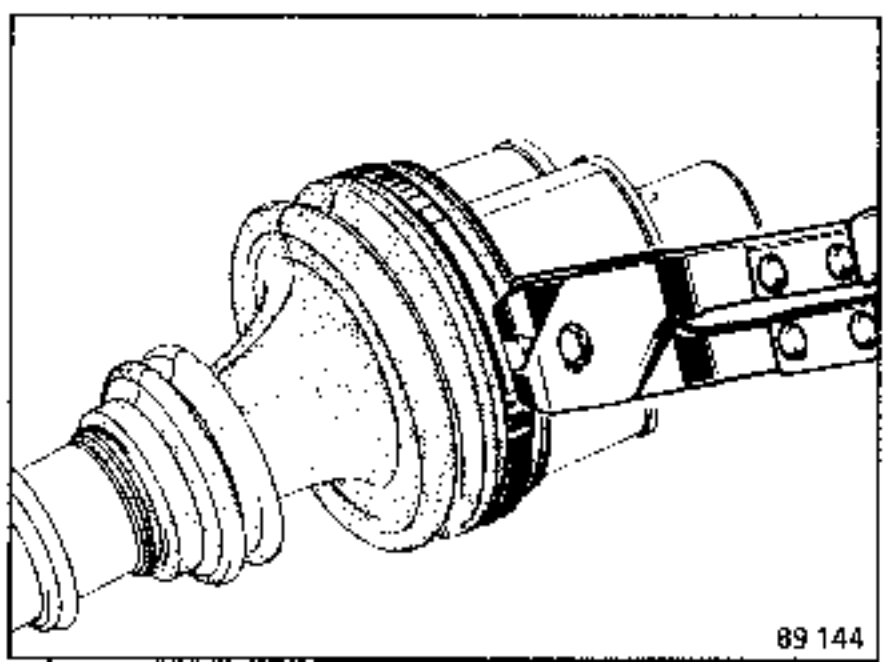
Extend or push together the joint to obtain dimension A = 156 ± 1 mm (measured between the end of the gaiter and the largest diameter of the machined face on the yoke).

In this position, remove the rod.



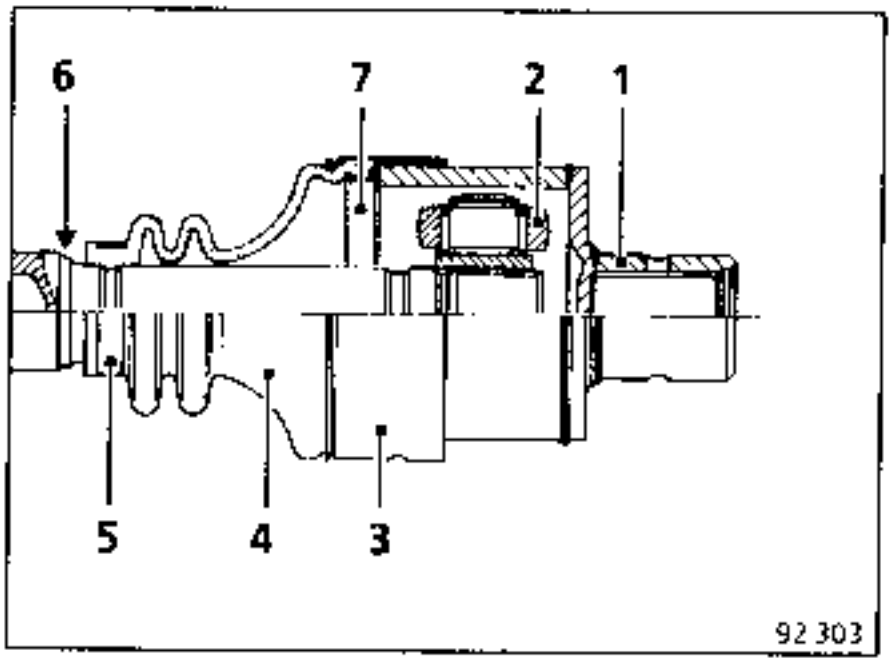
Fit:
- the retaining clip to the gaiter;
- the clip and tighten it using tool T.Av.1034.



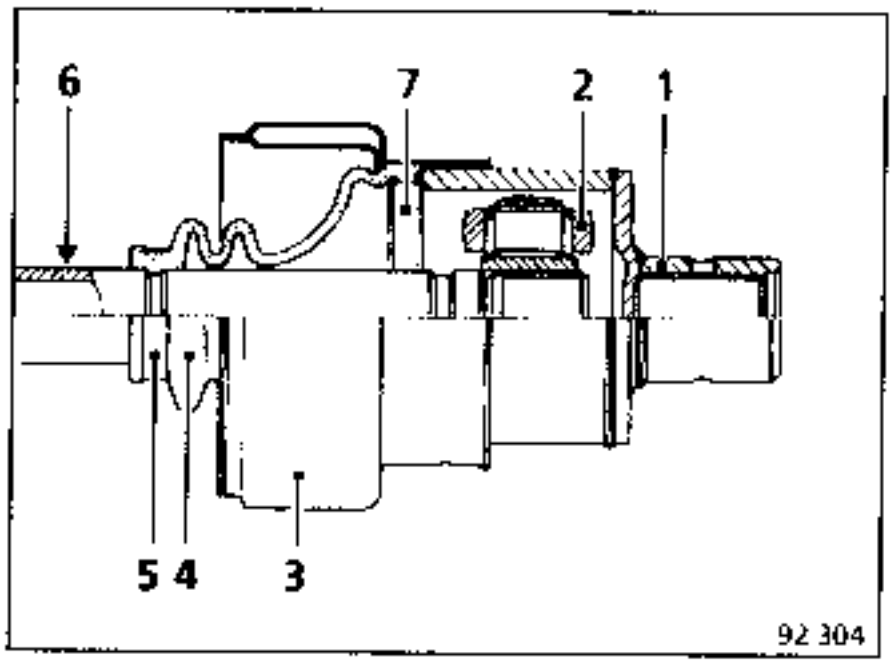


ESSENTIAL SPECIAL TOOLING	
T.Av. 1034	Drive shaft clip crimping pliers

1 Yoke
2 Spider
3 Heat shield or metal retaining casing
4 Rubber gaiter
5 Retaining clip
6 Drive shaft
7 Metal insert



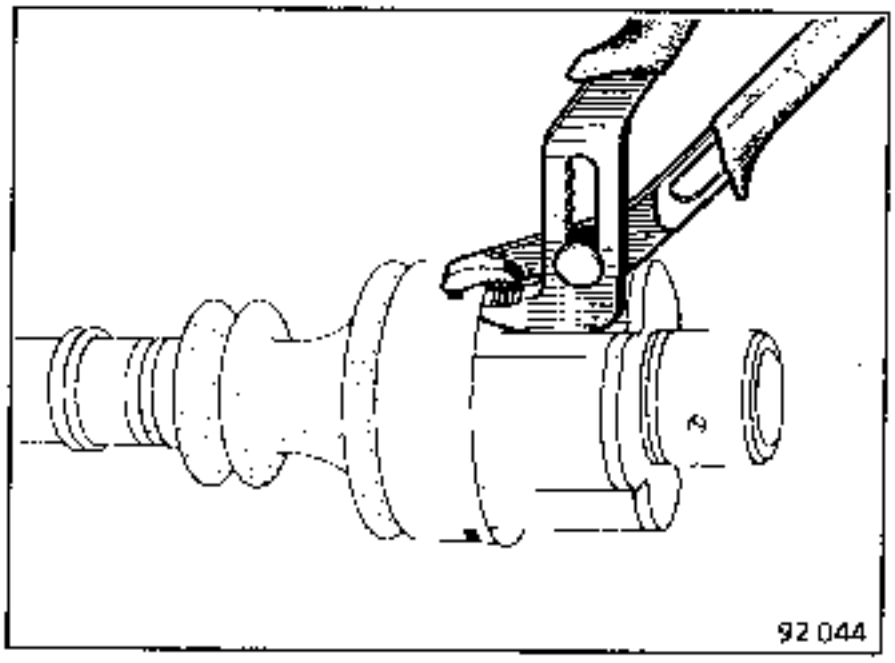
92 303

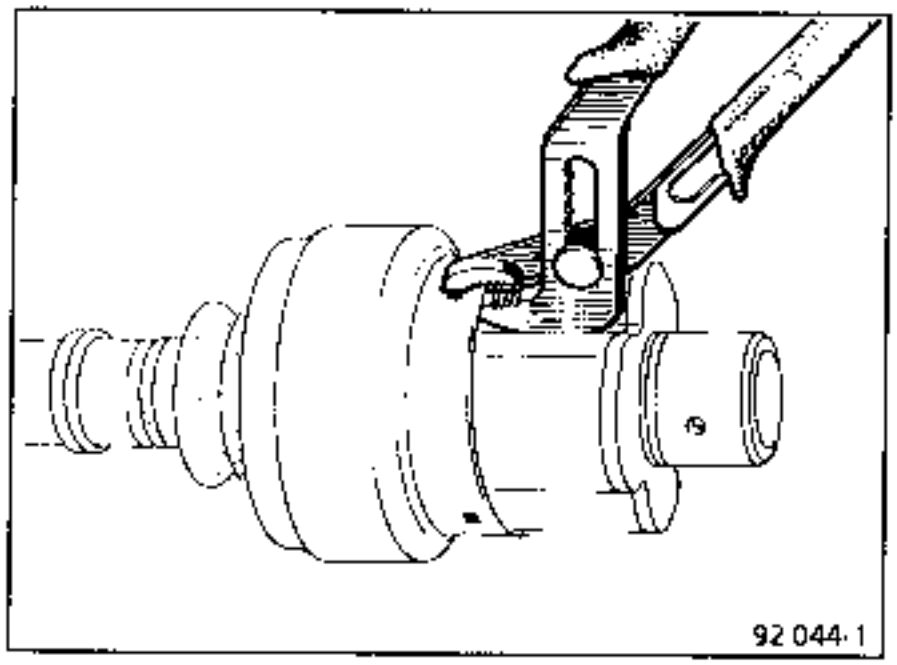


92 304

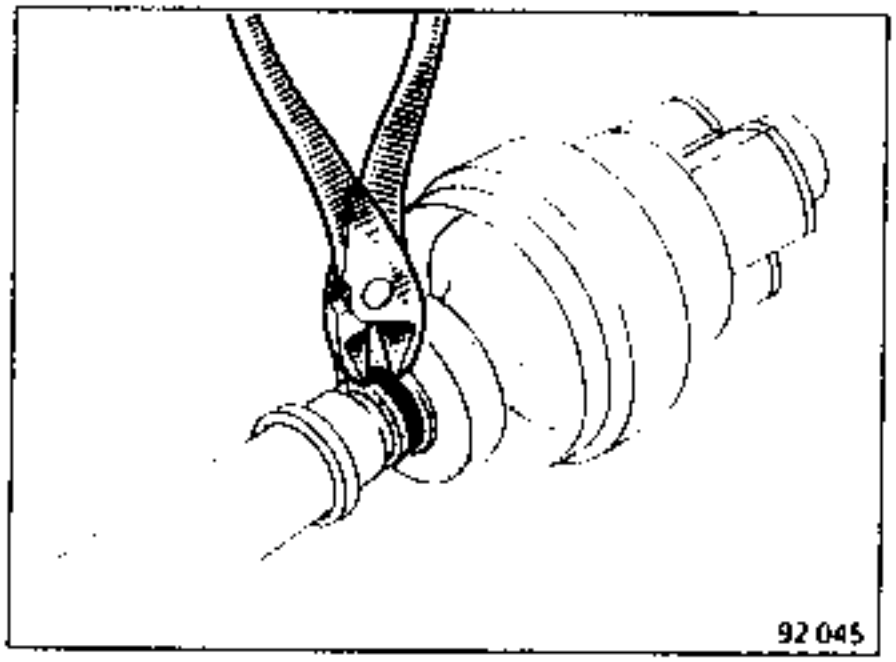
DISMANTLING

Uncrimp the three crimping points on the casing using pliers.


92 044

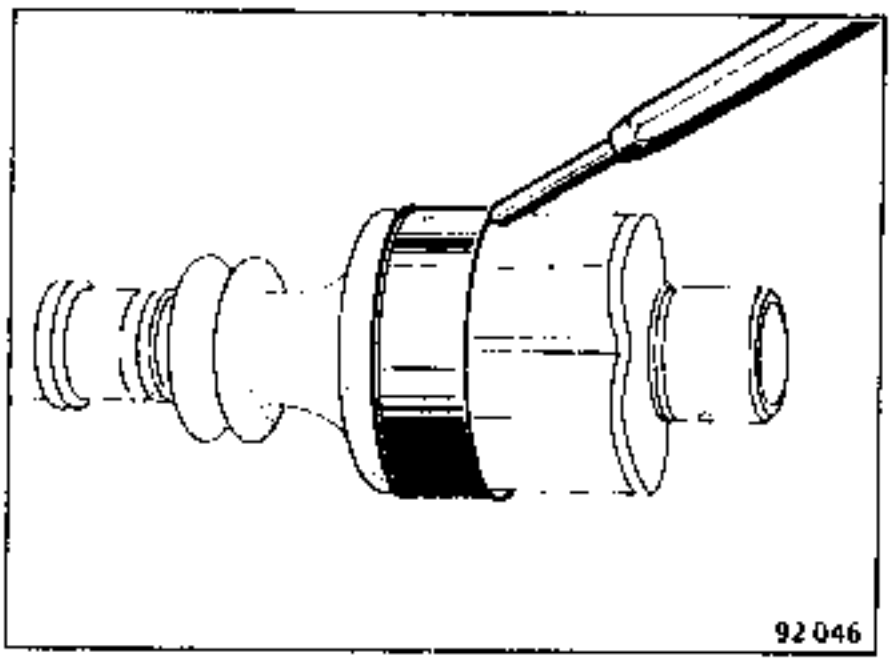

92 044-1

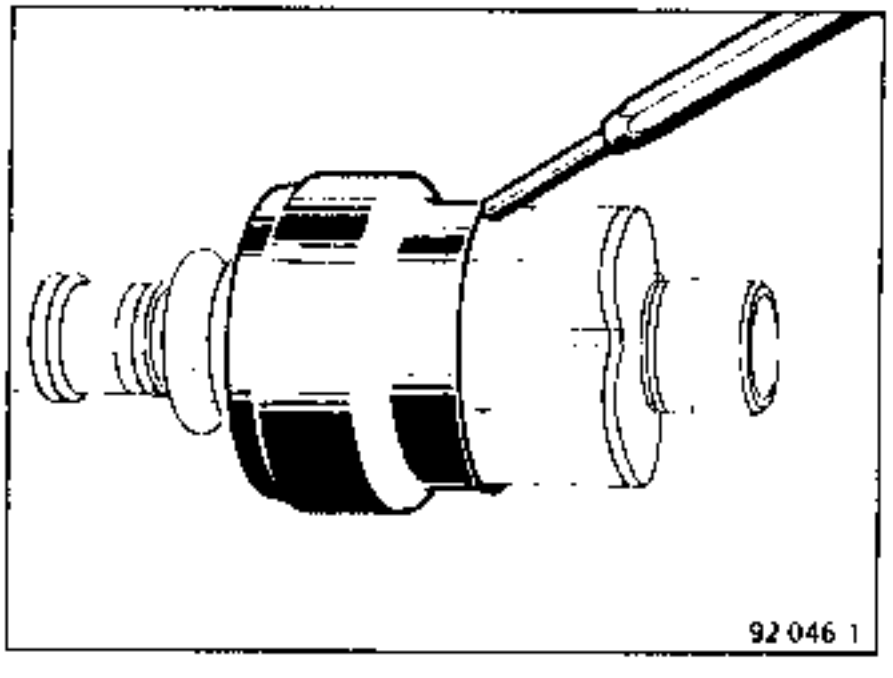
Cut the retaining clip and gaiter over its entire length.



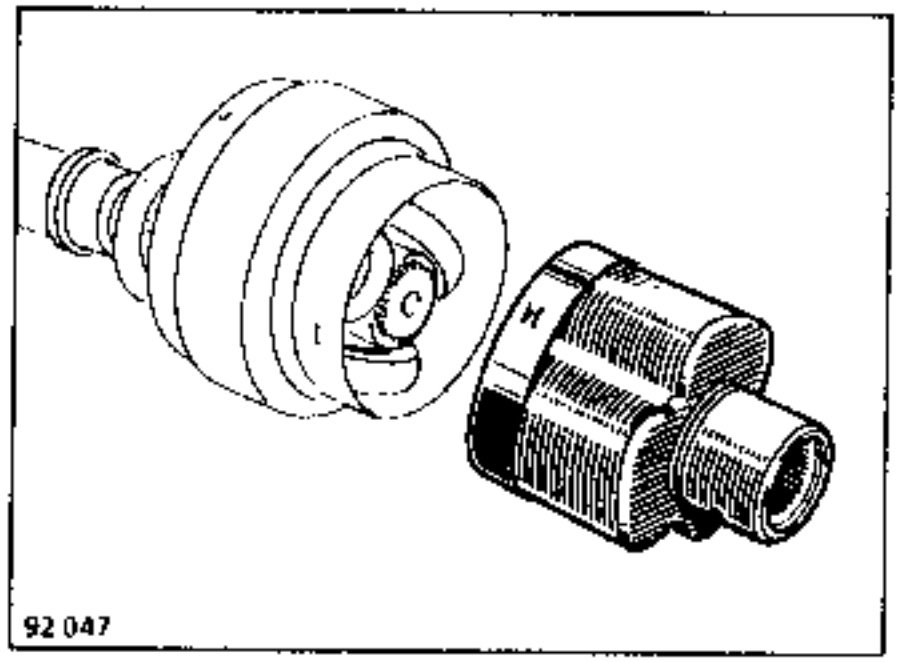
Remove as much grease as possible.

Remove the heat shield or metal retaining casing (depending on version).





Remove the yoke.

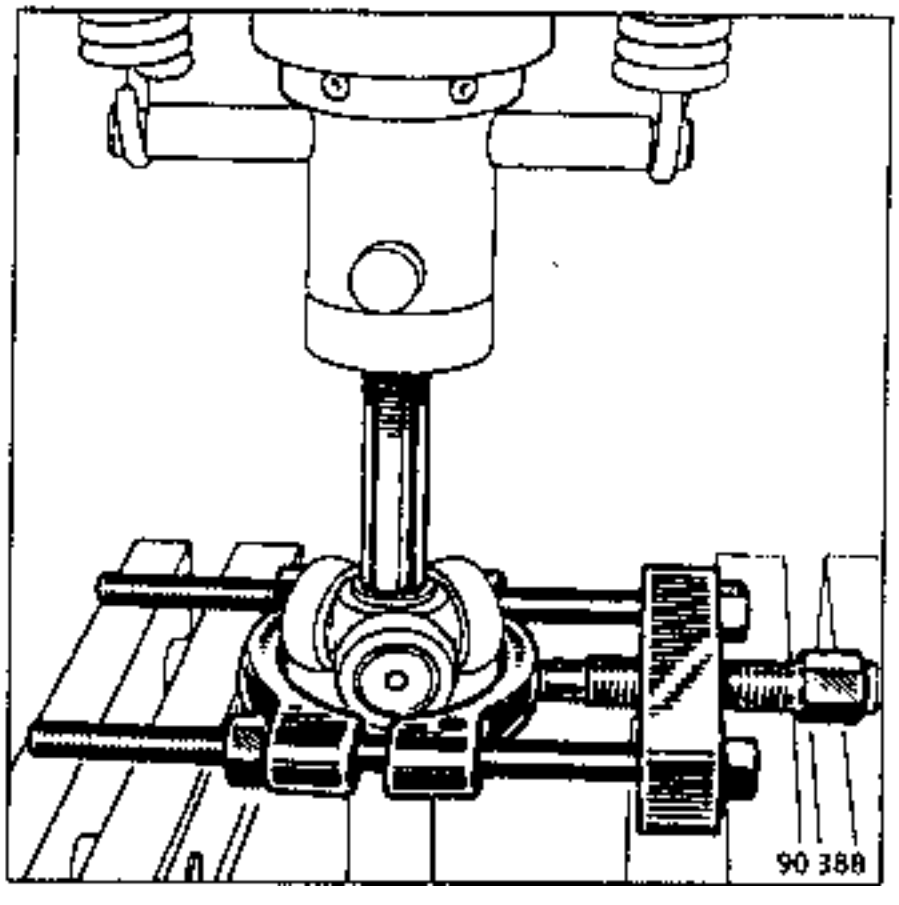


NOTE: as the yoke does not have a locking tab, do not force it when removing.

Do not remove the rollers from their respective trunnions as the rollers and trunnions are matched and must never be mixed up with one another.

Never use thinners for cleaning the component parts.

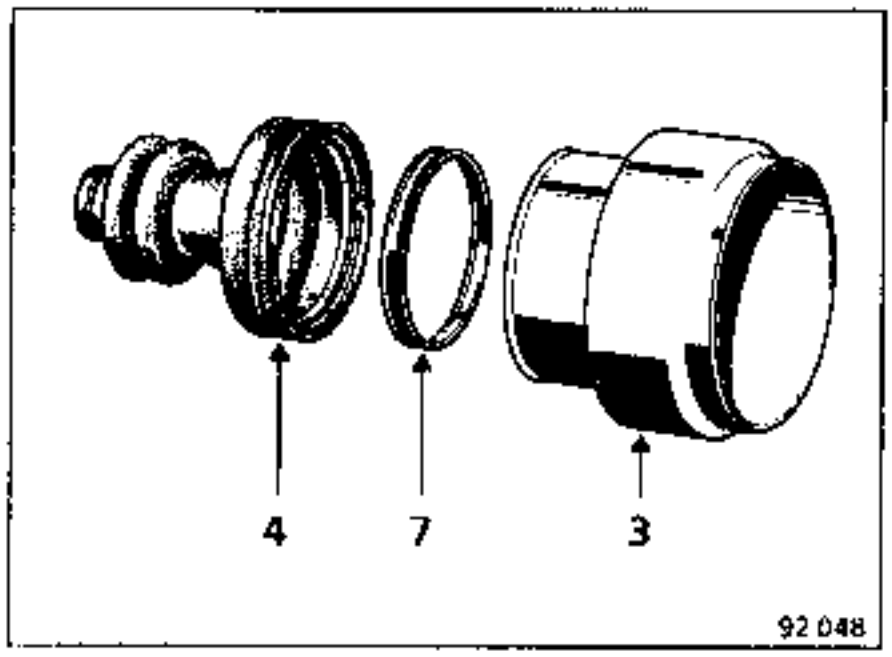
On the press, remove the spider taking the weight on a stripping extractor of the FACOM U53G type.



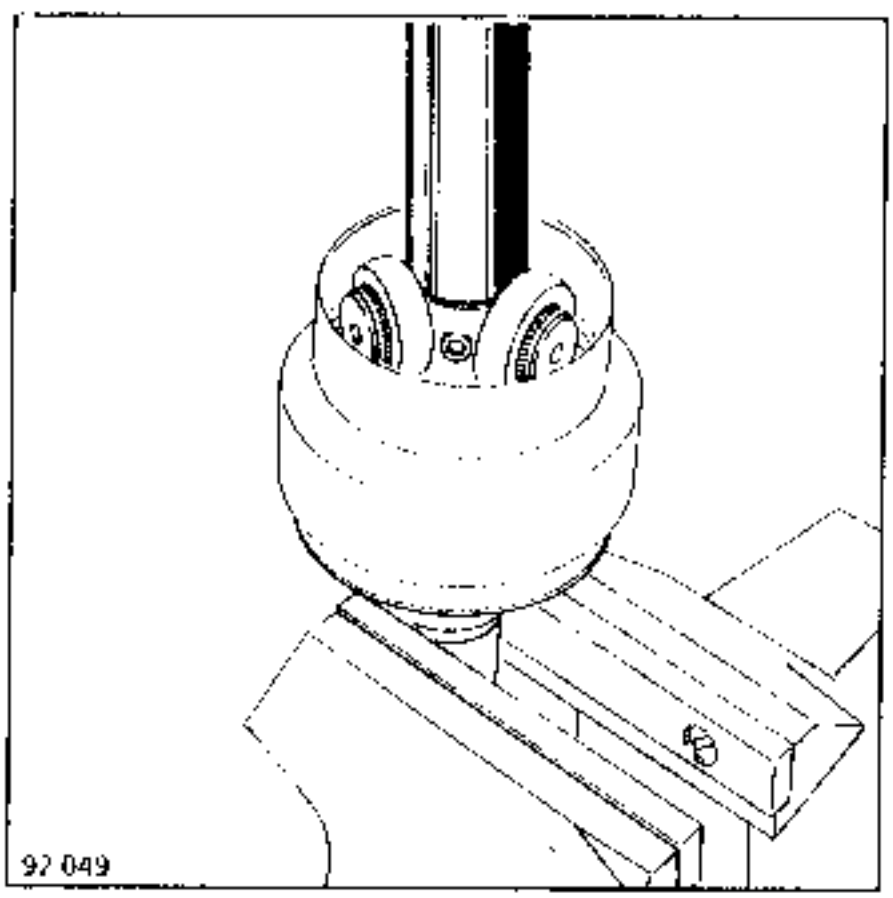
REASSEMBLY

Lubricate the drive shaft and slide on:

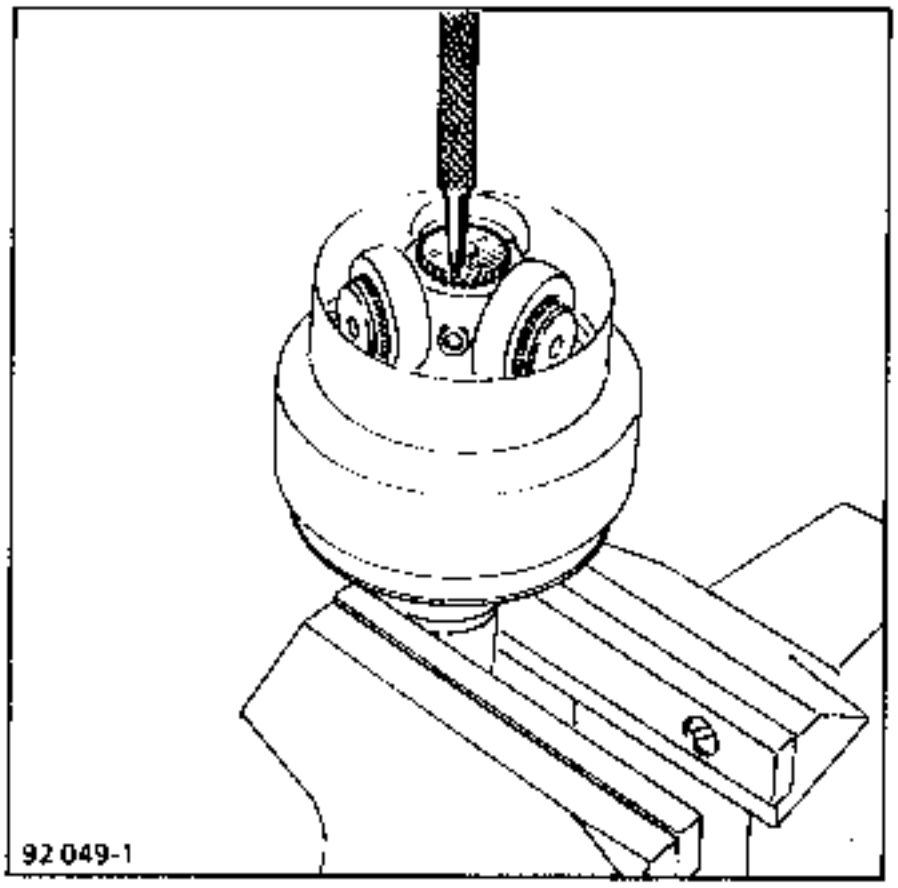
- a new retaining clip;
- rubber gaiter (4) with metal insert (7) and the heat shield or metal retaining casing (3) (depending on on assembly).



Refit the spider to the splined shaft.



Make three crimping points 120° apart by peaning back the metal of the splines onto the drive shaft.



Lubricate the yoke and engage it on the spider.

Distribute the sachet of grease inside the gaiter and yoke.

NOTE: It is essential to use the amount of grease specified in the consumables table.

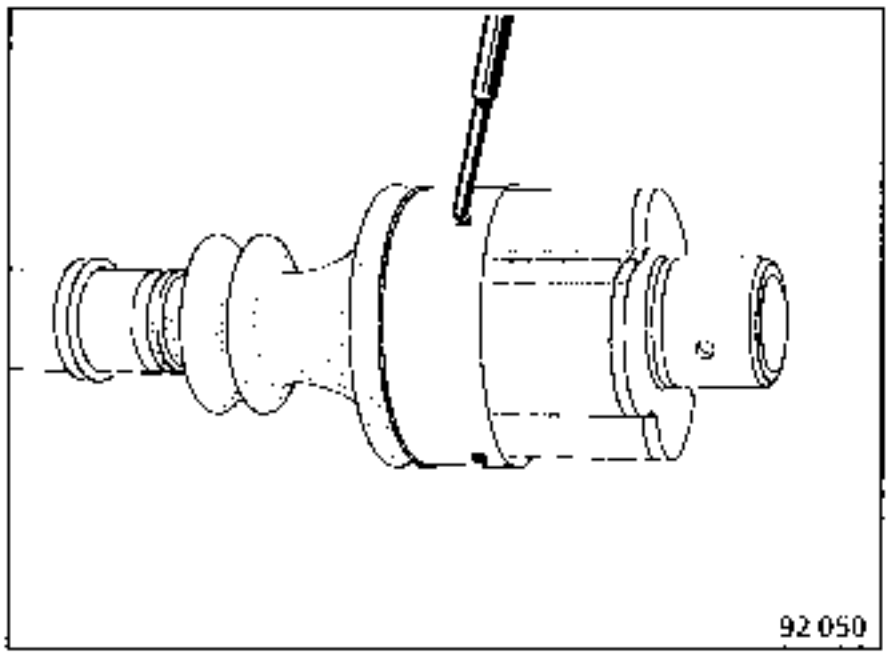
Fit:

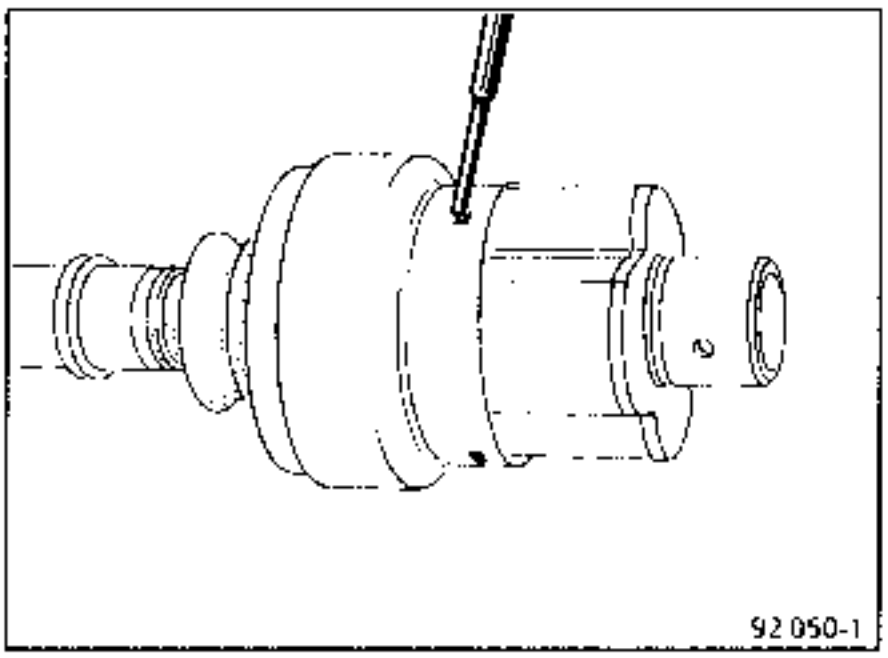
- the gaiter and its metal insert in the heat shield or metal retaining casing;

- the heat shield or metal retaining casing sliding it on until the guide plate is flush with the yoke.

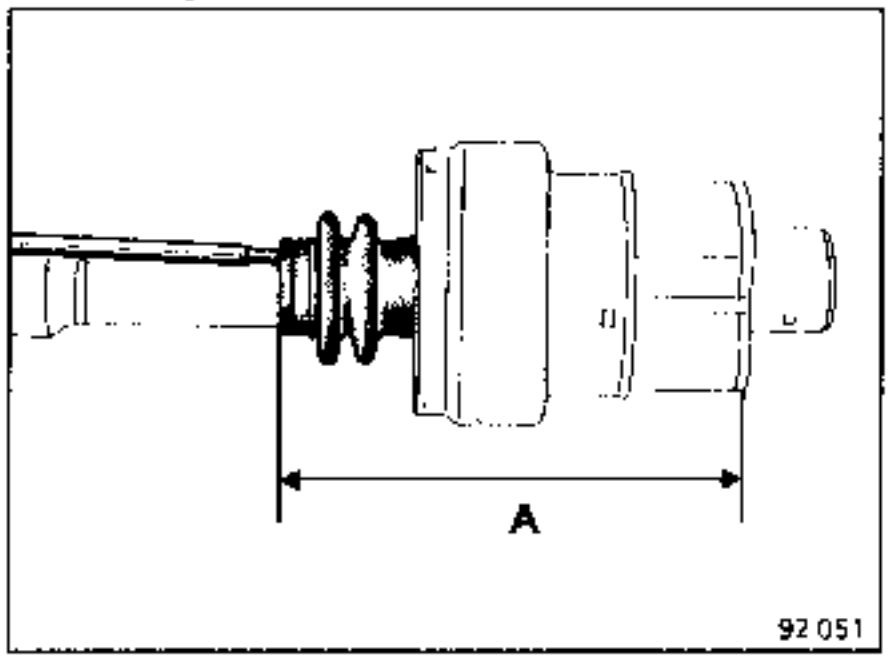
In this position, make three crimping points in the locations provided for this purpose on the guide plate.

REPLACING





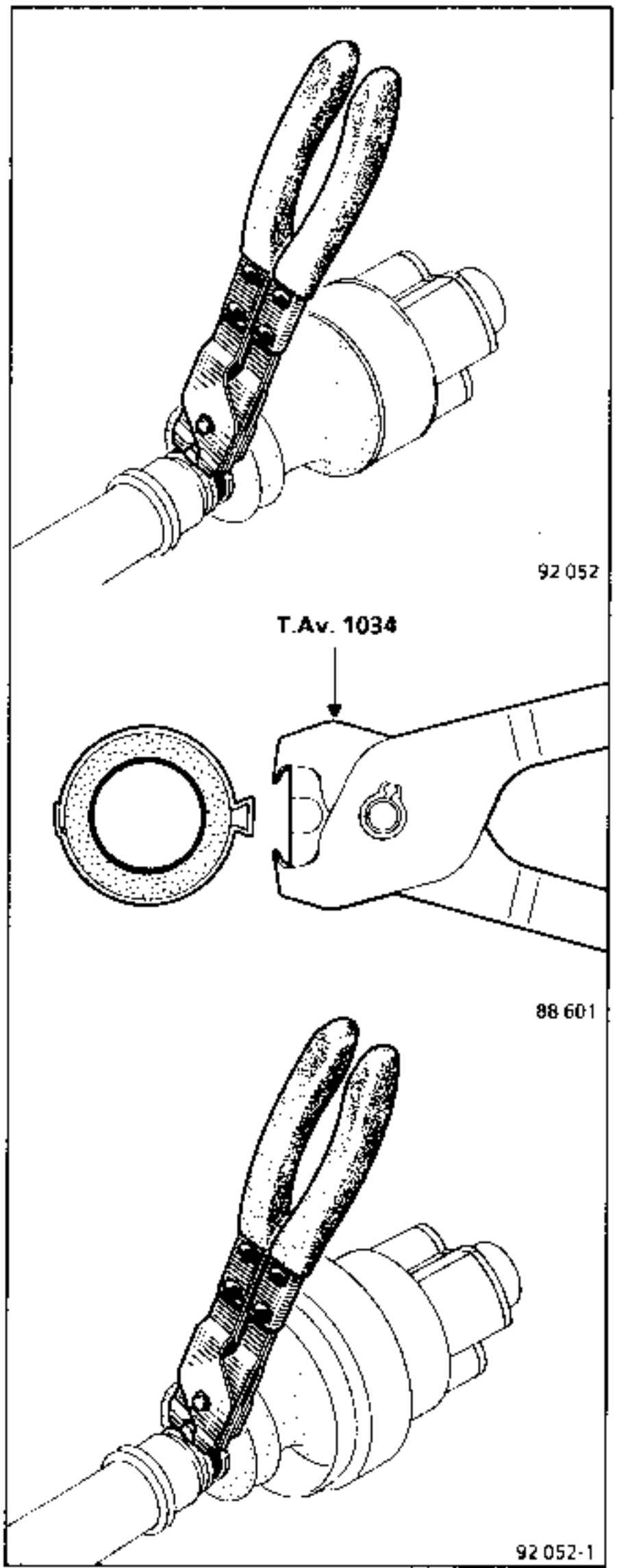
Insert a smooth rod with rounded ends between the gaiter and shaft in order to determine the amount of air remaining in the joint.



Extend or push together the joint to obtain dimension A = 156 ± 1 mm (measured between the end of the gaiter and the largest diameter of the machined face of the yoke).

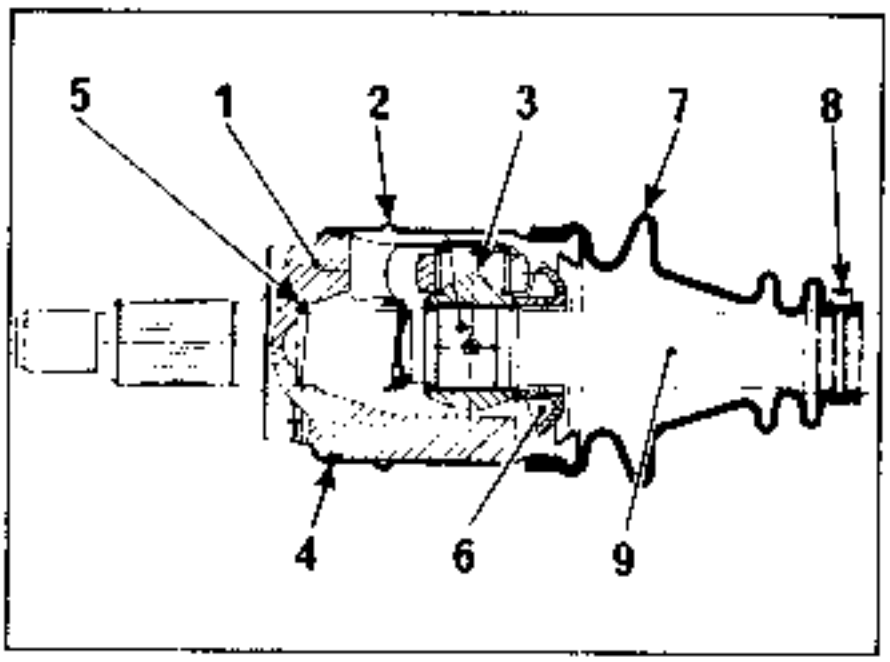
In this position, remove the rod.

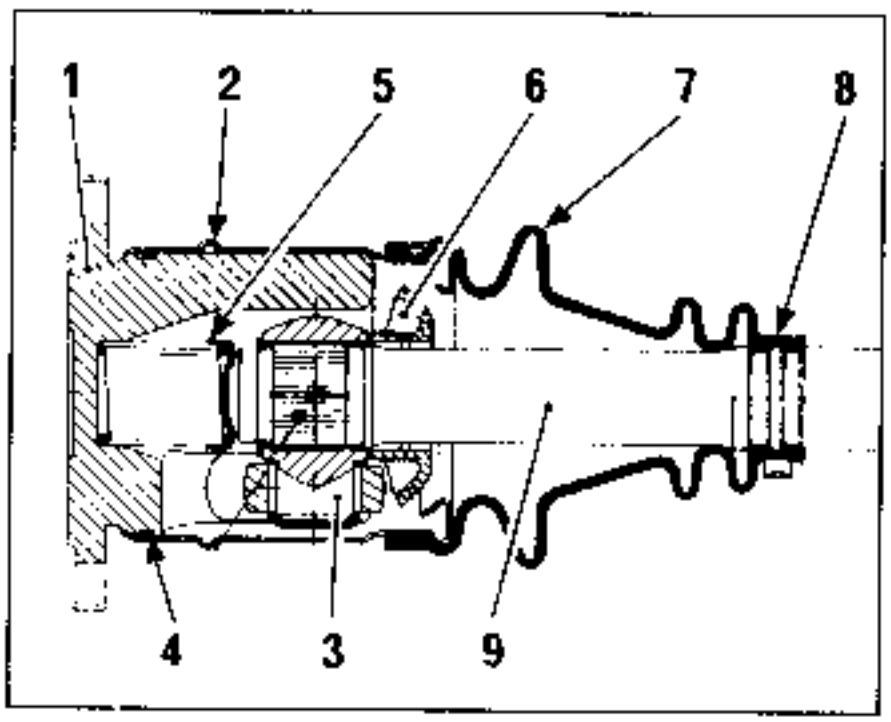
Fit the clip on the gaiter and tighten it using tool T.Av.1034.



ESSENTIAL SPECIAL TOOLING	
T.Av. 1034	Drive shaft clip crimping pliers

1 Yoke
2 Casing
3 Spider
4 Seal
5 Spring
6 Stop shim
7 Rubber gaiter
8 Retaining clip
9 Drive shaft

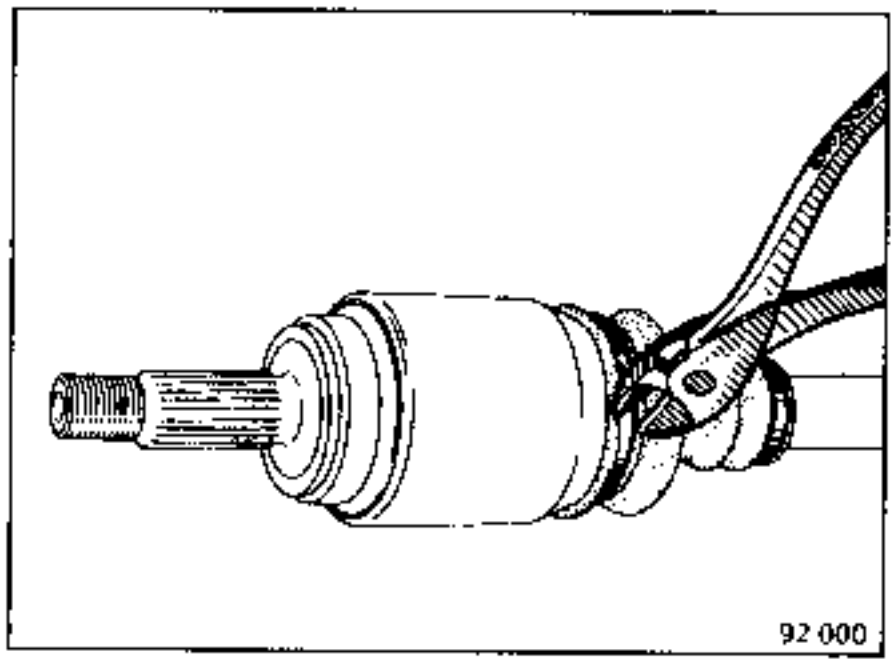


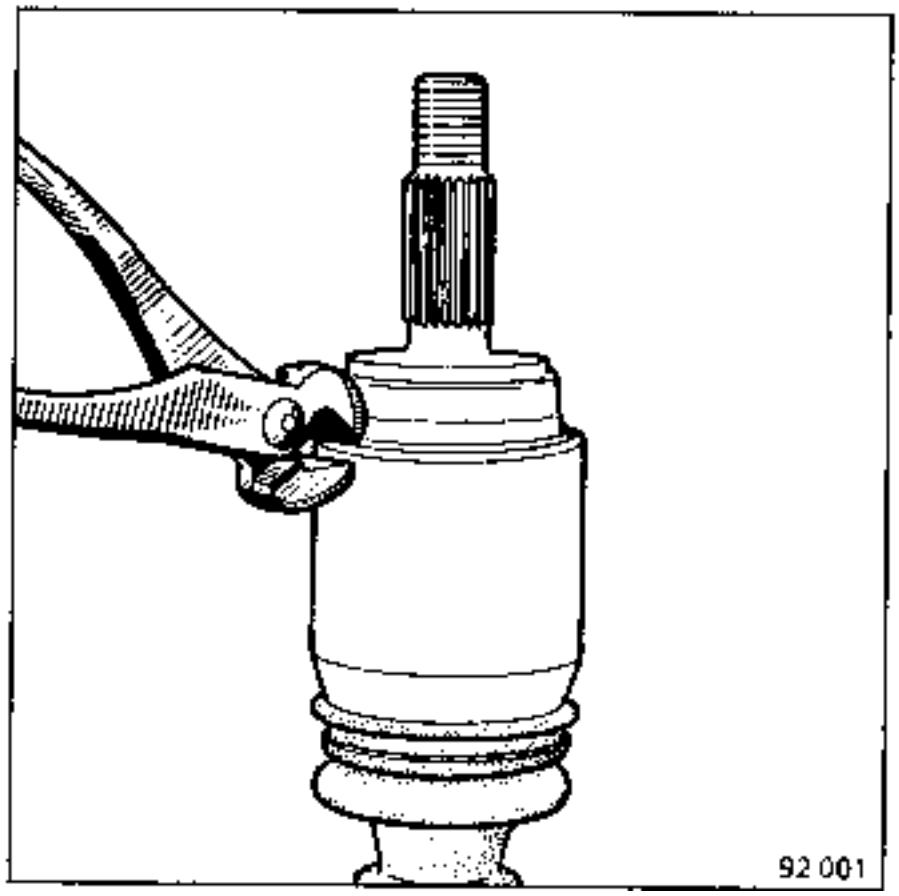


DISMANTLING

Cut the crimp clips

Uncrimp the metal casing from the yoke, free it and remove as much grease as possible.

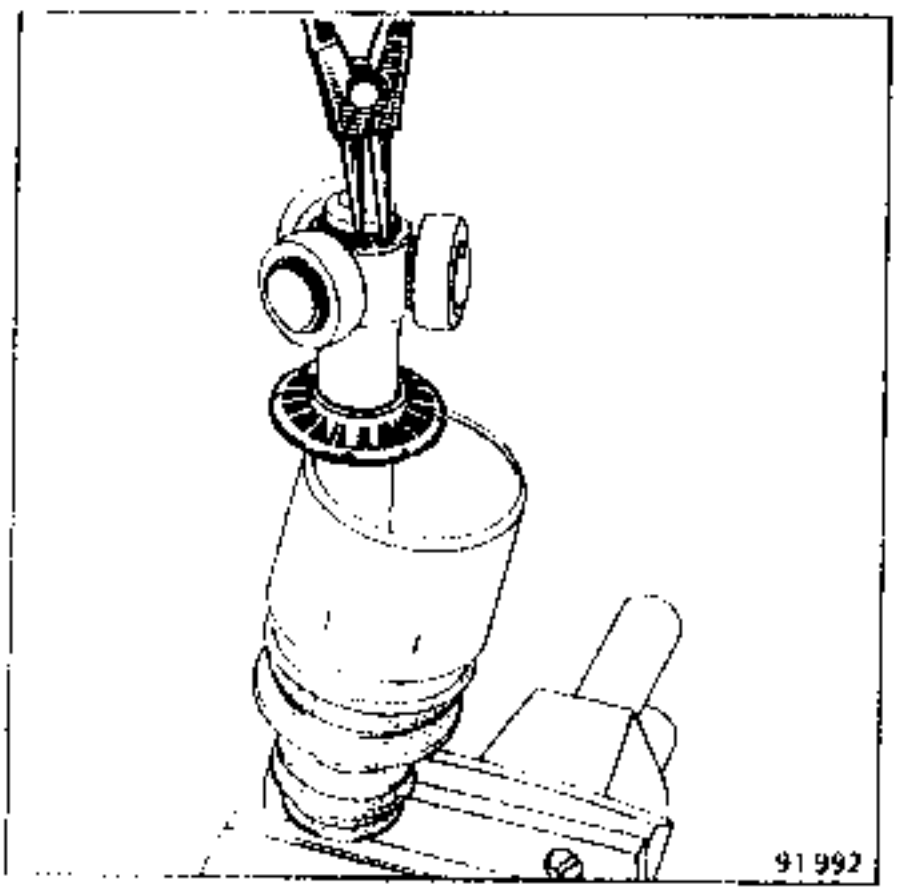




Remove:
- the yoke (3);
- the spring and its thrust cup (5).

Do not remove the rollers from their respective trunnions as the rollers and trunnions are matched and must never be mixed up with one another.

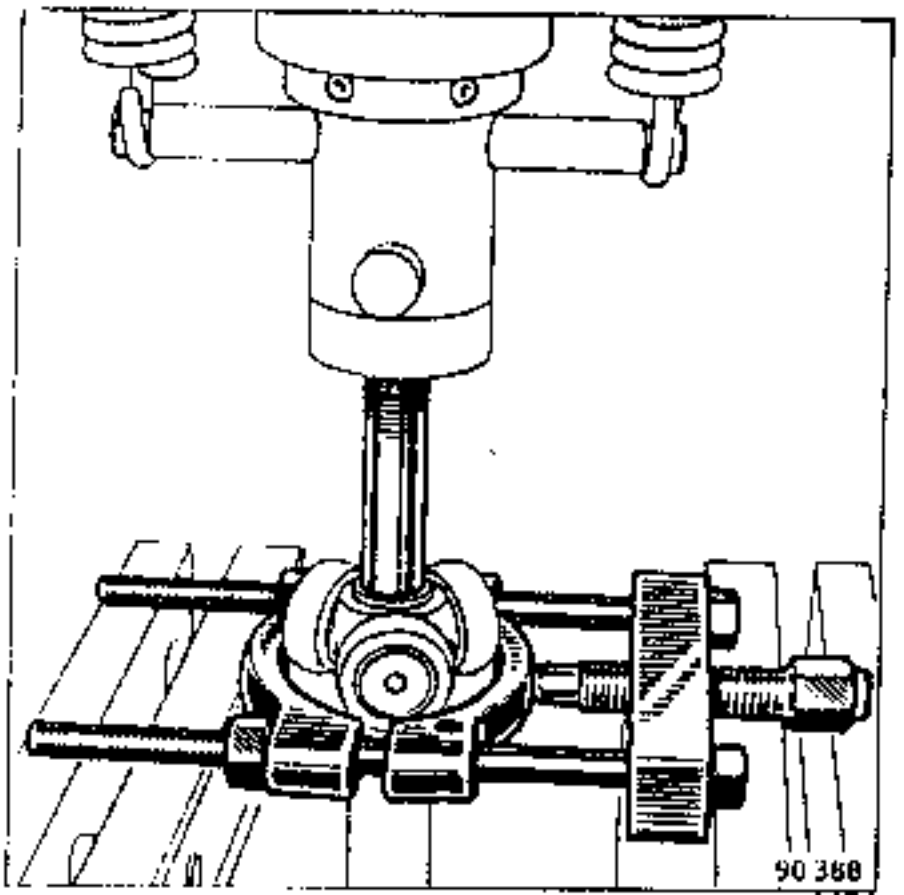
Remove the circlip.



Never use thinners for cleaning the component parts.

Mark the position of the spider.

On the press, take out the spiders taking the weight on a stripping extractor of the FACOM U53G type.

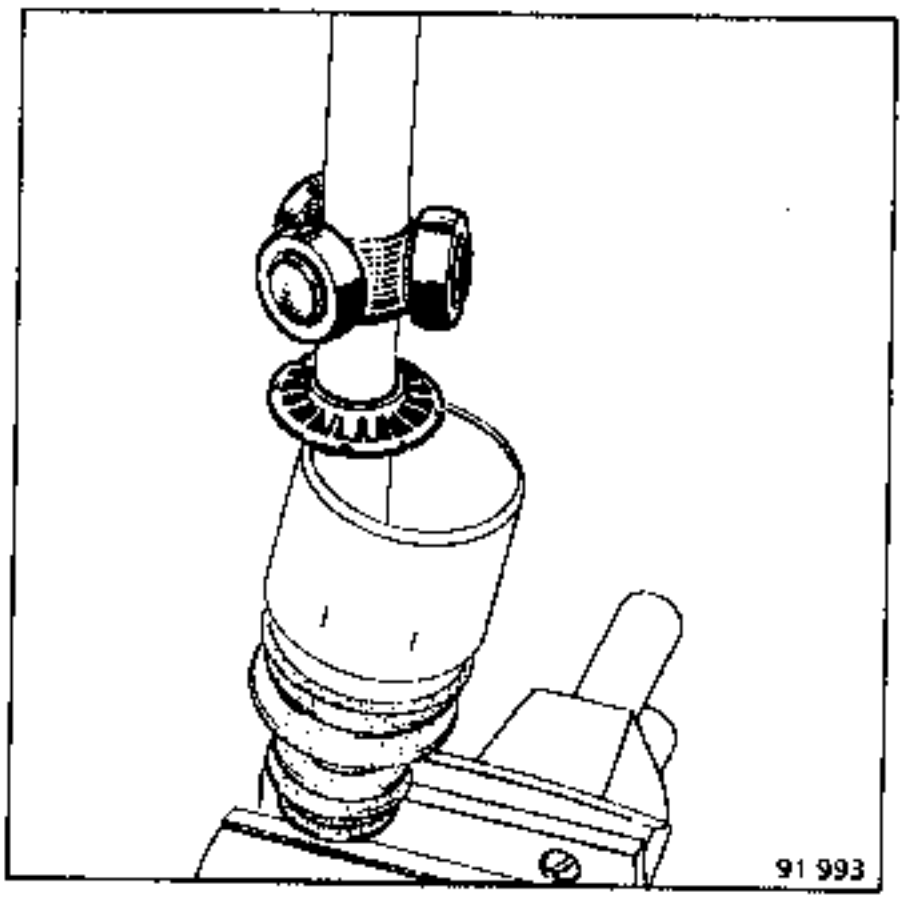


Remove:
- stop shim (6);
- casing (2);
- rubber gaiter (7).

REASSEMBLY

Lubricate the drive shaft and slide in place:
- the two clips around the shaft, if they are not of the open type;
- the new casing and gaiter;
- the stop shim.

Refit the spider on the splined shaft, ensuring that it is in its initial position.

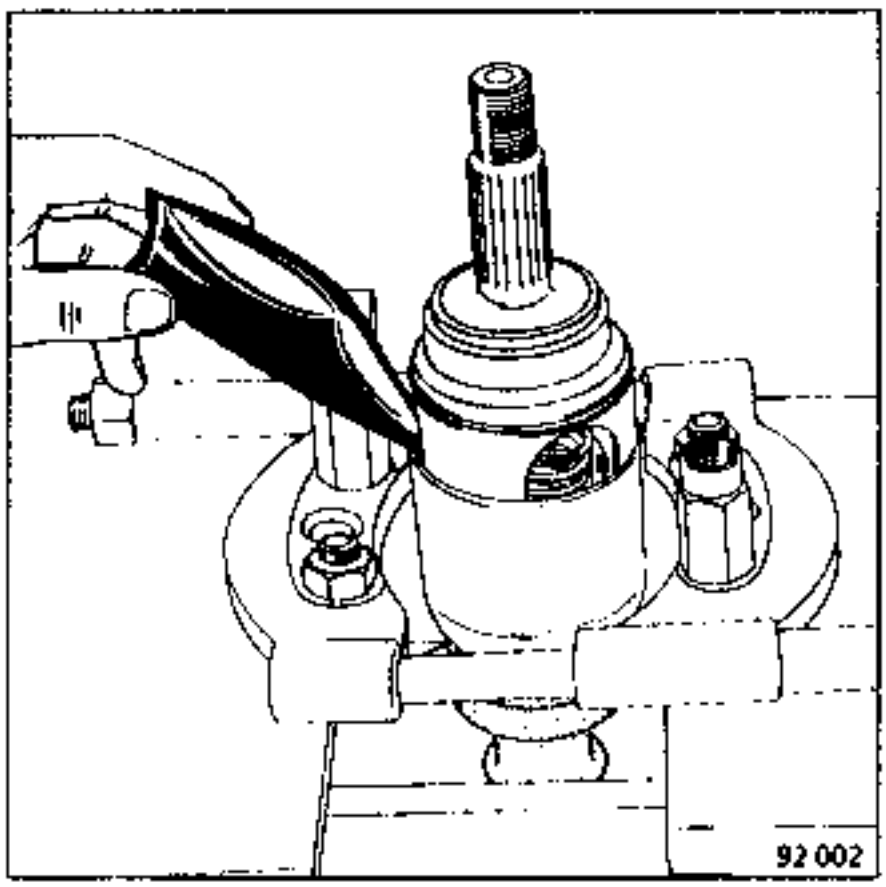


Refit the retaining circlip.

Fit in place the seal (4) in its groove on the yoke, the yoke with the spring and its thrust cup in the casing.

Distribute the sachet of grease inside the casing via the openings in the yoke.

Position the tool of the FACOM U53C type on the casing.

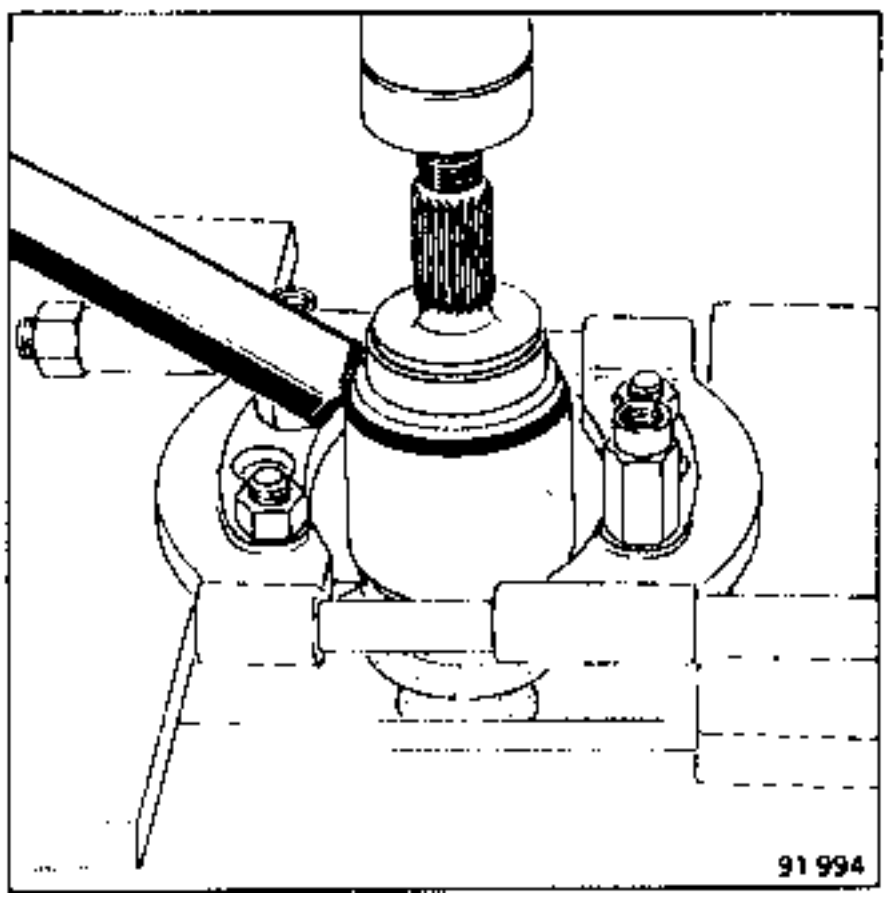


The yoke is fitted on the press.

Refit the yoke completely.

NEVER ALLOW THE PRESSURE TO INCREASE COMPLETELY.

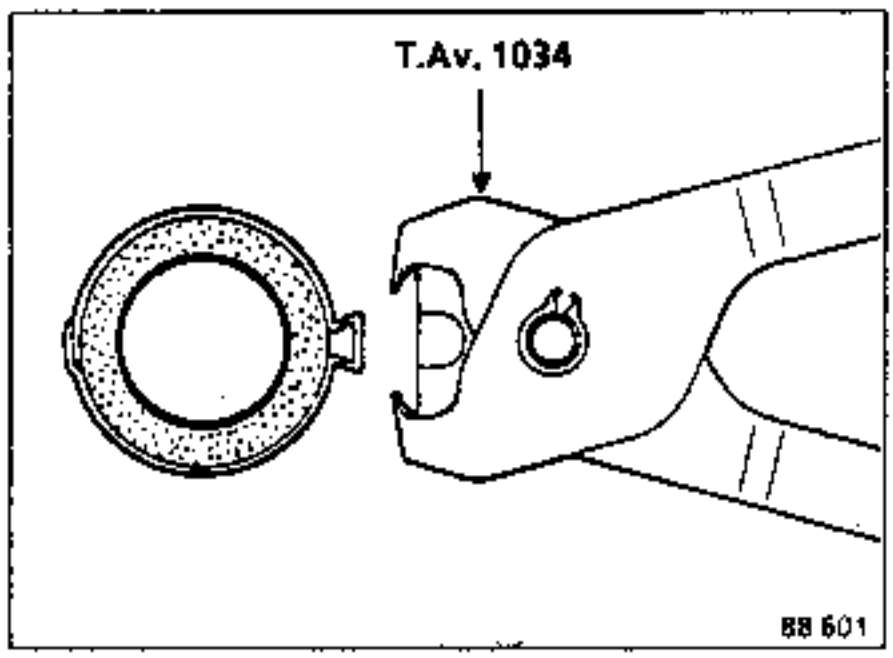
In this position crimp the casing onto the yoke.

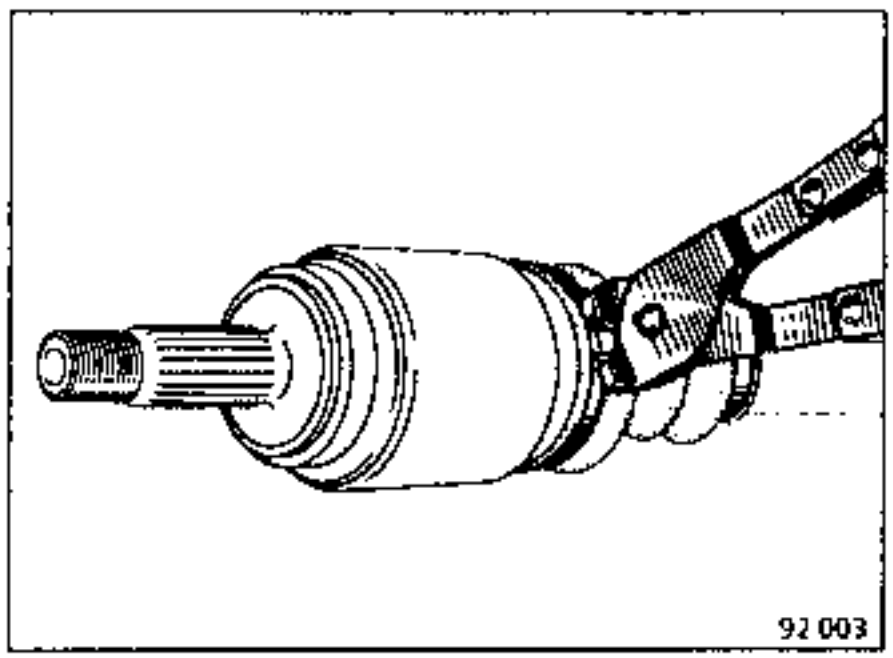


Position the gaiter lips in the drive shaft grooves on the casing.

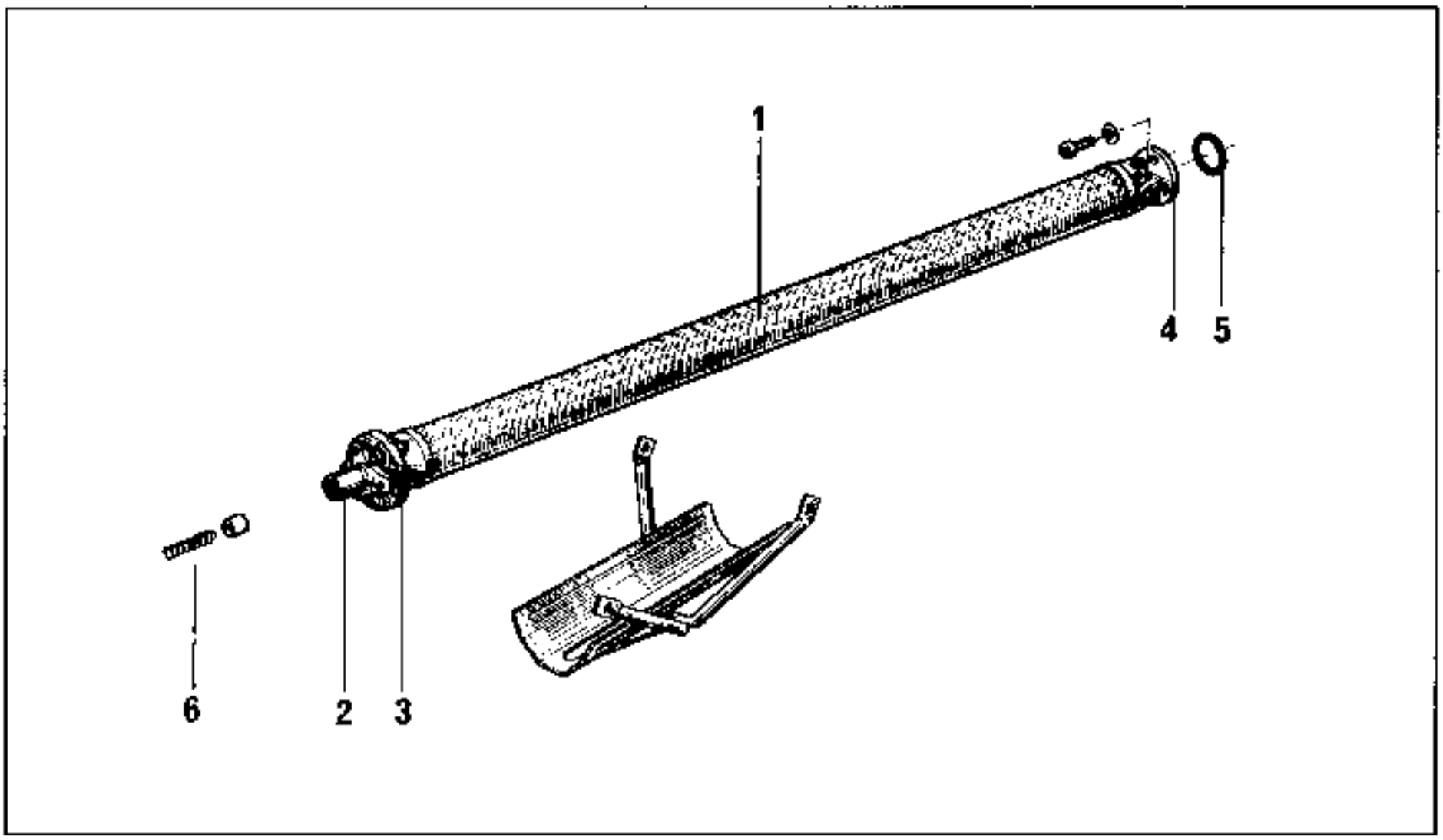
Insert a smooth rod with rounded ends between the gaiter and shaft to determine the amount of air remaining in the joint.

Fit the clips and tighten them with tool T.Av.1034.





PROP SHAFT



It consists of:

- A hollow shaft (1.6 metres long) (1) made from composite material: elementary winding of fibres (75% carbon fibres and 25% glass fibres) coated with EPOXY resin; it weighs 0.8 kg.

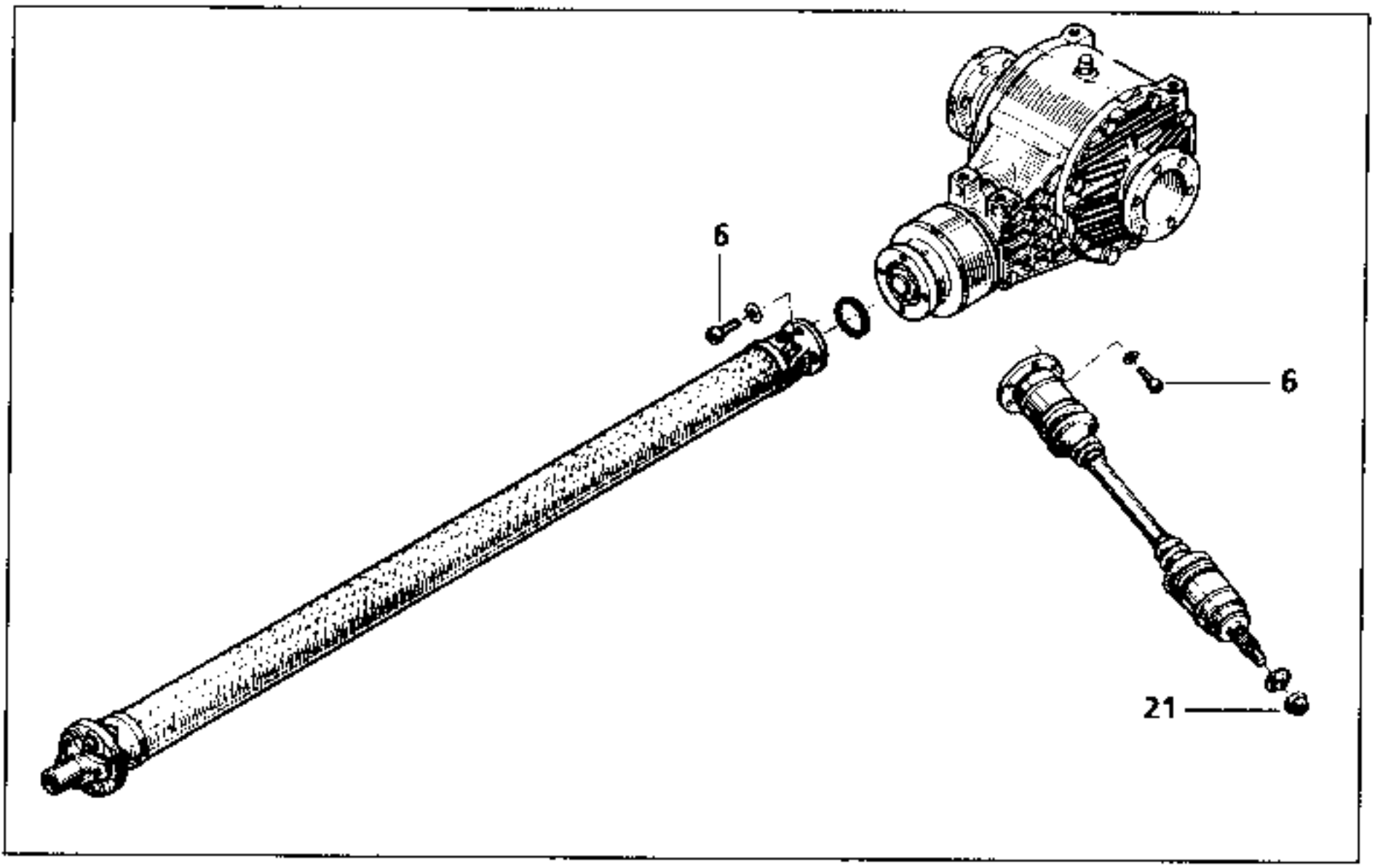
- A splined female end piece (2) at the front coupled to the shaft by means of a flexibloc bush (3); this end piece is fitted greased onto the gearbox output shaft and can slide.

  A spring (6) is placed between the gearbox output shaft and end piece (2) to absorb vibrations.

- A universal joint (4) at the rear, secured to the visco coupling by four bolts; sealing with respect to the visco coupling is via a seal (5).

The assembly, which is balanced in production, weighs 3.3 kg.

Tightening Torques (in daNm)



ESSENTIAL SPECIAL TOOLING
Heat Shield

TIGHTENING TORQUES (in daNm)	▽
Drive shaft bolts	6

REMOVAL

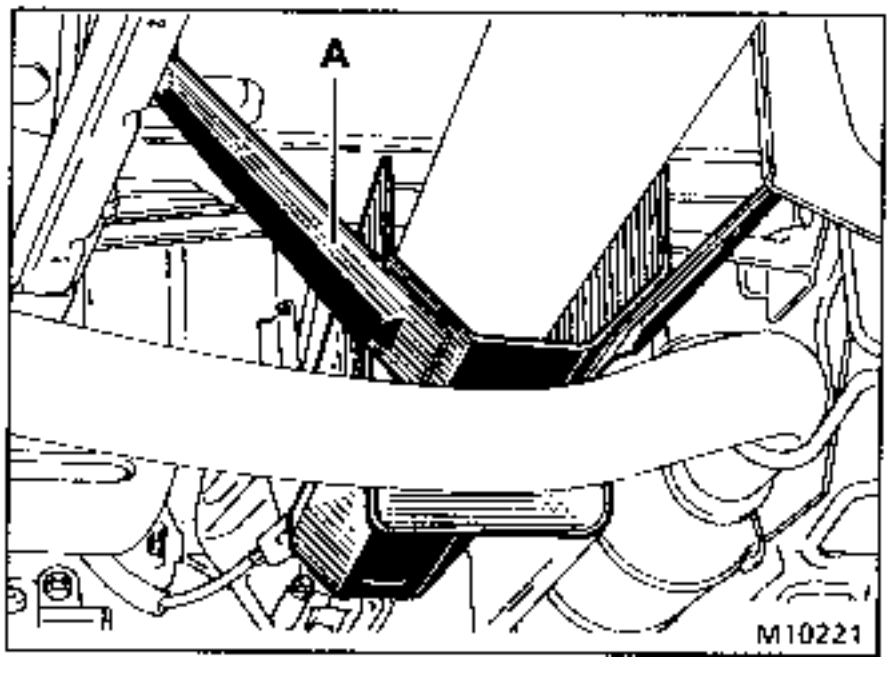
Place the vehicle on a lift.

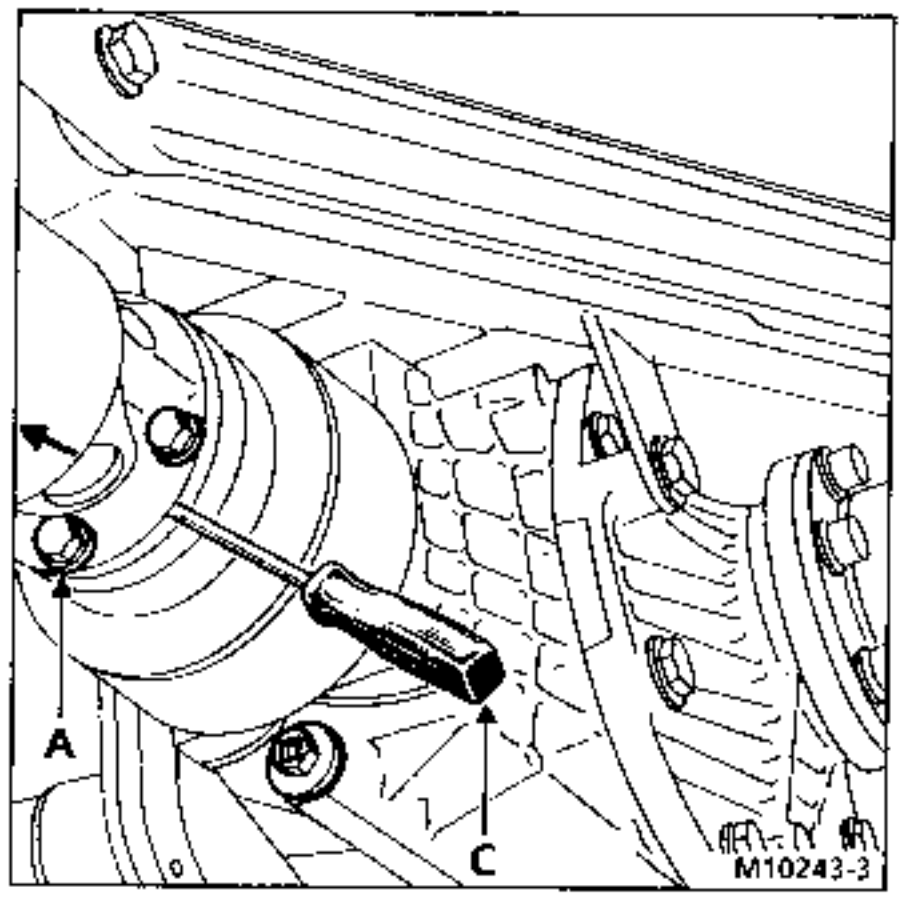
Do not engage any gears and do not apply the handbrake.

▽ Fit in place a heat shield between the exhaust pipe and drive shaft casing to prevent the shaft touching the hot exhaust and being damaged.

Slacken the four bolts securing the drive shaft casing (A) and remove it.

Remove four mounting bolts (B) from the drive shaft.





Using a flat ended screwdriver (C), take the weight between the universal joint and visco coupling and push the universal joint forwards to disengage the visco coupling (to compress spring 6 located between the gearbox output shaft and splined end of the shaft).

Free the shaft by pulling it backwards.

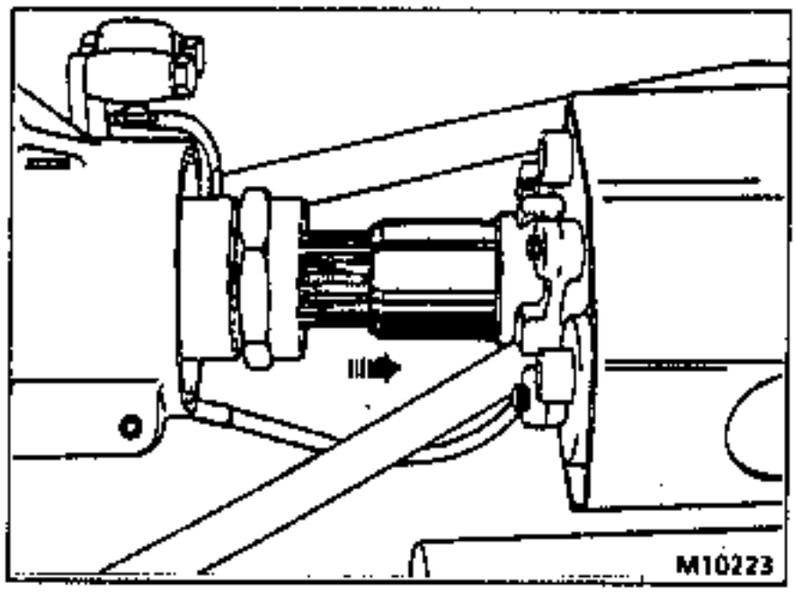
ATTENTION: recover and refit the spring.

PRECAUTIONS: The shaft is made of composite material and cannot resist impact and contact with very hot parts.

REFITTING

Position seal (1) in the visco coupling.

Lightly coat the splines at the gearbox end with MOLYKOTE BR2 grease.



Coat the mounting bolts on the visco coupling with Loctite FRENBLOC.

Refit the shaft, compressing it as much as possible at the front so that it can be fitted to the visco coupling: move the vehicle forwards or backwards to align the mounting holes.

Torque tighten the bolts as specified.

Secure the protective casing in place.